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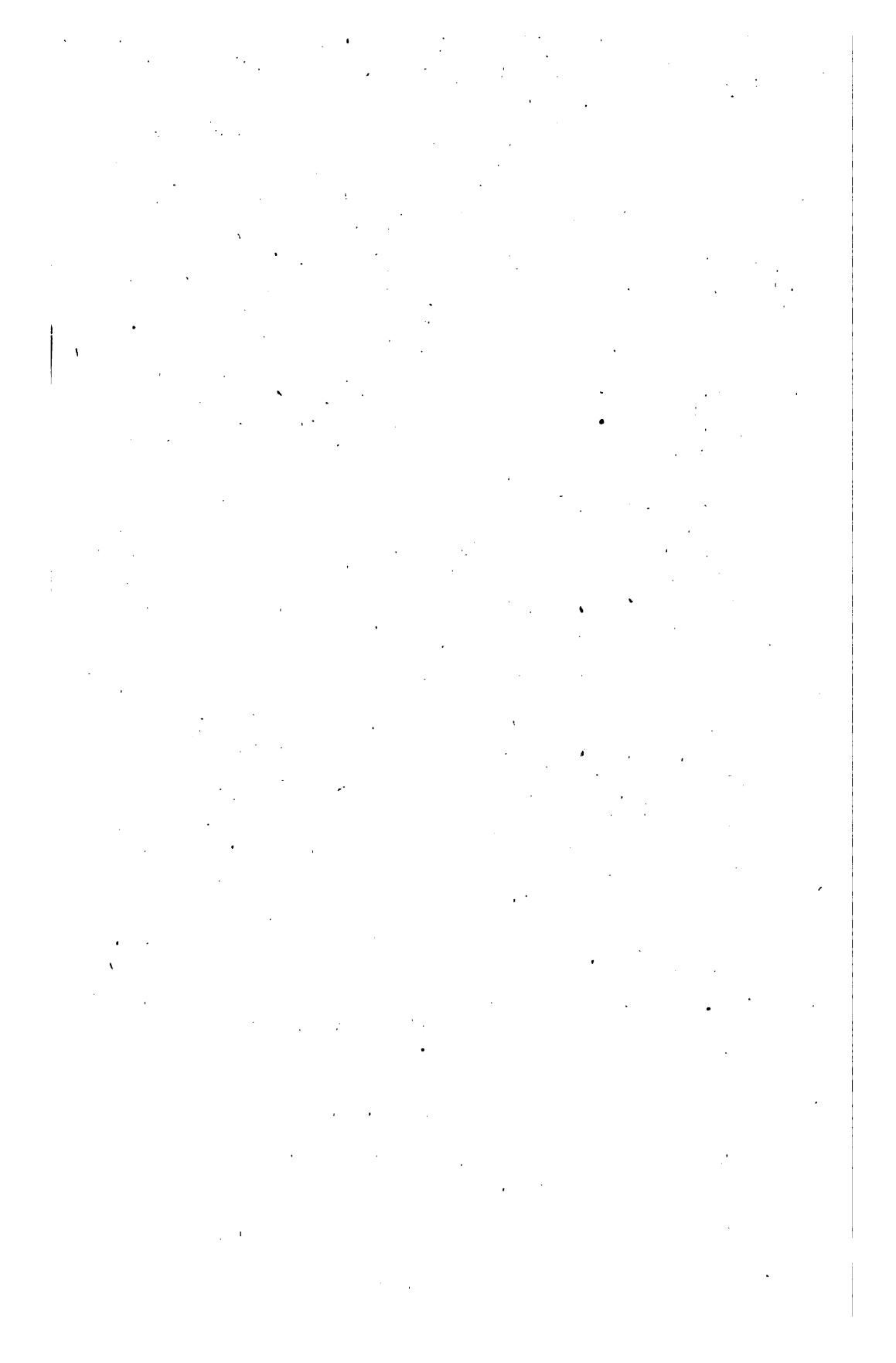
**PRESENTED BY
THE SOCIETY**

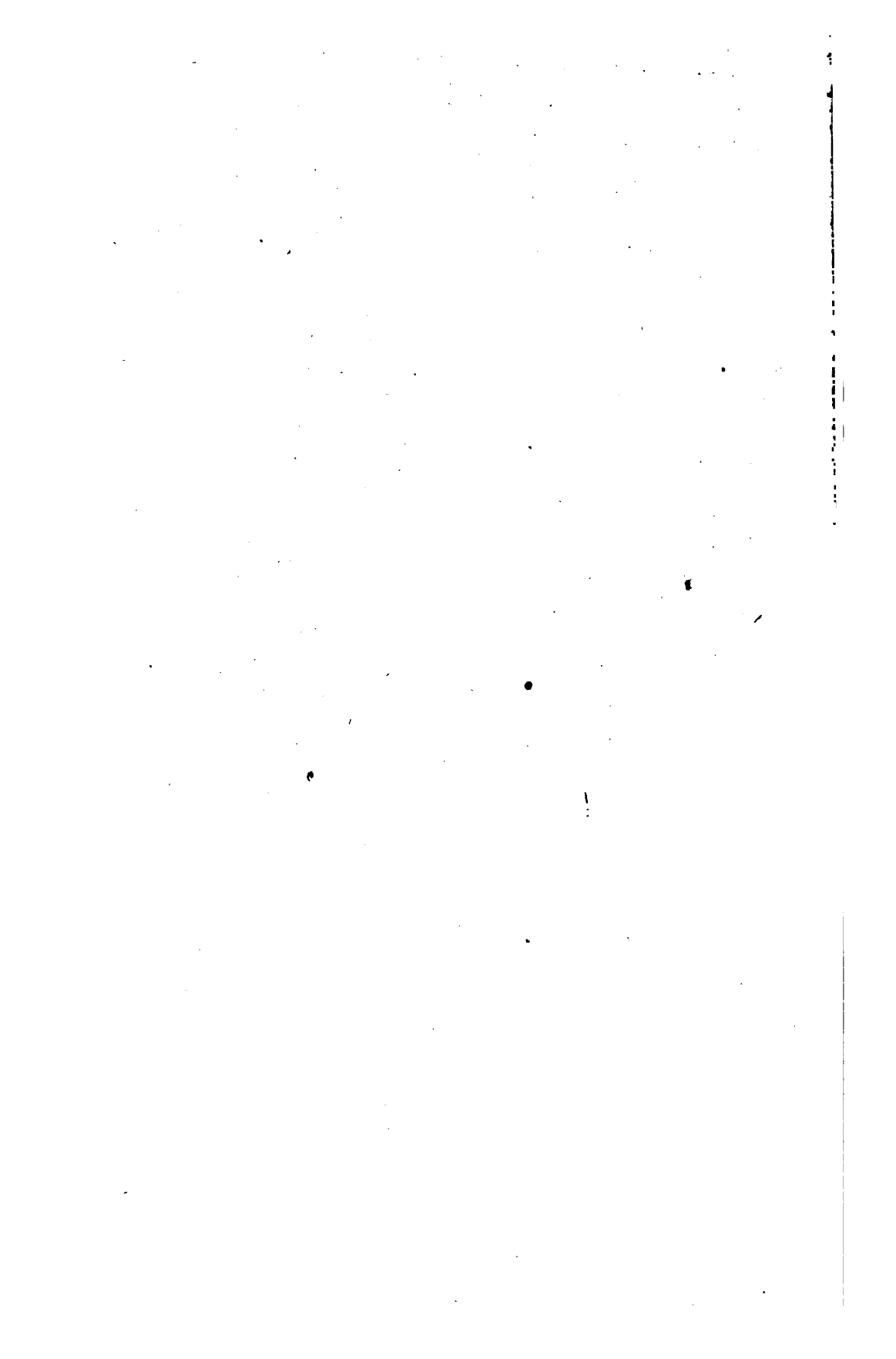
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ANNUAL REPORT
OF THE
MINNESOTA
=
STATE HORTICULTURAL SOCIETY
FOR THE YEAR 1885,

EMBRACING THE
TRANSACTIONS OF THE SOCIETY FROM MARCH 1, 1884,
TO MARCH 31, 1885; ALSO PROCEEDINGS OF
THE ANNUAL MEETING OF THE MINNE-
SOTA AMBER CANE ASSOCIATION,
ESSAYS, REPORTS, ETC.

VOL. XIII.



PREPARED BY THE SECRETARY S. D. HILLMAN, MINNEAPOLIS, MINN.

ST. PAUL, MINN:
THE PIONEER PRESS COMPANY.
1885.

LETTER OF TRANSMITTAL TO THE GOVERNOR.

OFFICE OF THE SECRETARY,
MINNEAPOLIS, March 31, 1885. }

To Hon. L. F. Hubbard, Governor of Minnesota :

SIR: I have the honor to submit herewith, in compliance with legal requisition, the accompanying report for 1885, with supplementary papers.

Respectfully yours,
S. D. HILLMAN,
Secretary Minnesota State Horticultural Society.

70:12

OFFICERS AND MEMBERS FOR 1885.

PRESIDENT.

TRUMAN M. SMITH.....St. Paul

VICE-PRESIDENTS.

A. W. SIAS.....Rochester

F. G. GOULD.....Excelsior

M. CUTLER.....Sumter

G. W. FULLER.....Litchfield

E. H. S. DARTT.....Owatonna

SECRETARY.

S. D. HILLMAN.....Minneapolis

TREASURER.

J. T. GRIMES.....Minneapolis

EXECUTIVE COMMITTEE.

The President, Secretary and Treasurer *ex officio* and

J. S. HARRIS.....La Crescent

J. M. UNDERWOOD.....Lake City

WYMAN ELLIOT.....Minneapolis

DITUS DAY.....Farmington

M. PEARCE.....Minneapolis

ENTOMOLOGIST.

Prof. N. H. WINCHELL.....Minneapolis

LIBRARIAN.

E. A. CUZNER.....College of Agriculture, Minneapolis

COMMITTEE ON SEEDLING FRUITS.

J. S. HARRIS.....La Crescent

COMMITTEE ON NOMENCLATURE.

A. W. SIAS.....Rochester

E. H. S. DARTT.....Owatonna

WYMAN ELLIOT.....Minneapolis

COMMITTEE ON FORESTRY.

S. M. EMERY.....Lake City

F. G. GOULD.....Excelsior

M. CUTLER.....Sumter

COMMITTEE ON FRUIT BLOSSOMS.

C. W. HALL.....Minneapolis

GEORGE P. PEPPER.....Pewaukee, Wis.

M. PEARCE.....Minneapolis

COMMITTEE ON RUSSIAN APPLES.

A. G. TUTTLE.....Baraboo, Wis.

A. W. SIAS.....Rochester

ANDREW PETERSON.....Waconia

COMMITTEE ON VEGETABLE GARDENING.

KNIGHT H. WHIPPLE.....Northome

FRED. BUSCH.....Richfield

W. H. BRIMHALL.....St. Paul

COMMITTEE ON SMALL FRUITS.

Prof. L. ASIRE.....Minneapolis

O. M. LORD.....Minnesota City

ISAAC GILPATRICK.....Minneapolis

COMMITTEE ON FLORICULTURE.

Mrs. C. O. VAN CLEVE.....Minneapolis

Mrs. A. MORSE.....Minneapolis

Mrs. J. F. RODGERS.....Lake City

GENERAL FRUIT COMMITTEE.

SIDNEY CORP.....	Hammond
D. K. MIECHENOR.....	Etna
CHARLES BRENDERMULE.....	Moorhead
C. E. SHANNON	Granite Falls
O. F. NORWOOD.....	Balatine, Lyon County
M. C. BUNNELL.....	Newport
J. N. STUBBS.....	Long Lake
GEORGE S. BARNES.....	Fargo, Dak.
WILLIAM MCHENEY.....	St. Charles
O. M. LORD.....	Minnesota City
CLARENCE WEDGE.....	Albert Lea
E. MEYER.....	St. Peter
M. CUTLER.....	Sumter
G. W. FULLER.....	Litchfield
L. E. DAY	Farmington
CHARLES LUDLUFF.	Carver
W. E. BRIMHALL.....	St. Paul

SUPERINTENDENTS OF EXPERIMENTAL STATIONS.

PROF. EDWARD D. PORTER.....	University Farm, Minneapolis
PETER M. GIDEON	Excelsior
M. PEARCE.....	Northome
G. W. FULLER.....	Litchfield
A. W. SIAS.....	Rochester
R. M. PROBSTFIELD.....	Moorhead
F. J. SCHREIBER.....	Moorhead
ANDREW PETERSON.....	Waconia
CHARLES LUDLUFF.....	Carver
UNDERWOOD & EMERY.....	Lake City
B. TAYLOR	Forestville
FRED VON BAUMBACH.....	Alexandria
E. H. S. DARTT	Owatonna
L. E. DAY.....	Farmington
J. H. BROWN	Lac qui Parle
J. S. HARRIS	La Crescent

The members of the General Fruit Committee are expected to report separately on all matters of interest in Horticulture, but more especially to bring to the notice of the society new and improved fruits.

ANNUAL MEMBERS, 1885.

ACKERMAN, J. H.....	Young America
ANDREWS, JOHN P.....	Faribault
BEEBE, A.....	Faribault
BLAKELEY, RUSSELL.....	St. Paul
BRACKETT, GEO. A.....	Minneapolis
BRADLEY, R. H.....	Henry, Dak.
BRASLAN, CHARLES P.....	Minneapolis
BRIMHALL, W. E.....	St. Paul
BRIMHALL, W. H.....	St. Paul
BUNNELL, M. C.....	Newport
BUSCH, FRED.....	Richfield
BUSSE, F. H.....	Minneapolis
CALE, J. J.....	Minnetonka
CANNON, WILLIAM.....	Fort A. Lincoln, Dak.
CASS, LOUIS A.....	Blunt, Dak.
CASSIDAY, J. J.....	Rochester
CHANDLER, E. W.....	Minnehaha
CLAUSSEN, EMIL J.....	Bismarck, Dak.
CORP, SIDNEY.....	Hammond
CUTLER, M.....	Sumter
CUZNER, E. A.....	Minneapolis
DARTT, E. H. S.....	Owatonna
DAY, DITUS.....	Farmington
DAY, L. E.....	Farmington
DEMO, ANTHONY.....	Hokah
DEWEY, F. G.....	Esmond, Dak.
DUNBAR, HENRY N.....	Winnebago City
DUNTON, H. J.....	Clearwater
EBERT, C. F.....	Tomah, Wis.
FAIRCHILD, H. S.....	St. Paul
FORD, F. C.....	Newport
FORD, J. A.....	Newport
FORSTER, WILLIAM.....	Chatfield
GIDEON, JOSIAH.....	Excelsior
GILMORE, J. F.....	Richfield
GILPATRICK, ISAAC.....	Minneapolis
GOULD, F. G.....	Excelsior
GOULD, MRS. F. G.....	Excelsior
GROAT, H. G.....	Anoka
HARRIS, EUGENE E.....	La Crescent

HARRIS, FRANK I.....	La Crescent
HENDRICKSON, W. G.....	St. Paul
HILLMAN, S. D.....	Minneapolis
HOAG, M. J.....	Rochester
INGERSOLL, D. W.....	St. Paul
JENKINS, J. W.....	Champlin
KENNING, CHARLES.....	Bird Island
KLINE, JACOB.....	Hokah
KRAMER, J. C.....	La Crescent
LATHAM, A. W.....	Excelsior
LORING, C. M.....	Minneapolis
LOSSING, WILLIAM.....	Hokah
LYONS, WILLIAM.....	Minneapolis
MCDougALL, JOHN.....	Fergus Falls
McINTOSH, WILLIAM.....	Langdon
MEIGHEN, T. J.....	Forestville
MENDENHALL, R. J.....	Minneapolis
MERRILL, D. D.....	St. Paul
NAGLE, E.....	Minneapolis
NOBLES, J.....	Glencoe
NORTHRUP, J. E.....	Minneapolis
ORR, ANDREW.....	Long Prairie
PETERSON, J. W.....	Olivia
PHILLIPS, A. J.....	Blunt, Dak.
PORTER, PROF. EDWARD D.....	Minneapolis
PUFFER, F. L.....	Bird Island
REED, A. H.....	Glencoe
ROBERTS, C. C.....	Lake City
SEAGER, F. B.....	Cannon Falls
SHANNON, C. E.....	Granite Falls
SHEERAN, P. C.....	St. Paul
SHERMAN, A.....	Canton, Lincoln County, Dak.
SMITH, C. L.....	Minneapolis
SMITH, FLORENCE.....	Cresbard, Faulk County, Dak.
SOMERVILLE, WILLIAM.....	Viola
SPRAGUE, MRS. L. E. P.....	Minneapolis
STARR, O. A.....	Montevideo
STUBBS, N. J.....	Long Lake
STURTEVANT, F. W.....	Montevideo
TANNER, WILLIAM.....	Cannon Falls
TAYLOR, B.....	Forestville
THOMPSON, T. J.....	Northville, Dak.

TRAIN, H. B.....	Hokah
UNDERWOOD, J. M.....	Lake City
UNDERWOOD, MRS. ANNA B.....	Lake City
WARD, C. W.....	Sumter
WEBSTER, H.....	Lake City
WEDGE, CLARENCE.....	Albert Lea
WEDGE, S.....	Rochester
WHIPPLE, KNIGHT H.....	Northome
WINCHELL, PROF. N. H.....	Minneapolis
WOOD, H. D.....	Minneapolis
WOODRUFF, PHILO.....	Faribault
WRIGHT, JAMES.....	Minnesota City

ADDITIONAL MEMBERS FOR 1884.

The following members paid their dues for 1884 after the report for that year went to press, and in the order following:

F. J. SCHREIBER.....	Moorhead
E. H. S. DARTT.....	Owatonna
J. H. BRYANT.....	St. Paul
MICHAEL KNOPP.....	Winona
L. MCCURDY.....	Mitchell, Dak.
G. W. HARRINGTON.....	Plainview
T. BARRETT.....	Herman
HOLLIS GIBSON.....	Fremont, Wis.
J. W. TAYLOR.....	Winnepeg, Manitoba
H. I. THOMPSON.....	Lake City
J. COLE DOUGHTY.....	Lake City
JOHN C. FOWLER.....	Lake City
M. C. COOK.....	Rochester
C. E. SHANNON....	Granite Falls
P. B. NETTLETON.....	Montevideo
JOHN W. PETERSON.....	Olivia
J. NOBLES.....	Sumter
WM. CAREY.....	Glencoe
R. F. SMITH.....	Montevideo
C. M. STEVENS.....	Clearwater
H. J. DUNTON.....	Clearwater
W. T. RIGBY.....	Clearwater
JAMES JENKS.....	Clearwater
J. WHITING.....	Clearwater

JOHN A. FORD.....	Newport
H. G. GROAT.....	Anoka
ANDREW HOLES.....	Moorhead
JOHN A. SALZER.....	La Crosse, Wis.
CHARLES KENNING.....	Bird Island
NELS ANDERSON.....	Lake City
DR. F. L. PUFFER.....	Bird Island
ETHAN CRANDALL.....	Sumter
REV. O. H. TH. SOLEIN.....	Holstad
E. S. GOFF.....	N. Y. Experimental Station, Geneva, N. Y.
WM. LAING MEASON.....	Lesser Dog Creek, Clinton, British Col.
A. J. PHILLIPS.....	West Salem, Wis.
B. CONVERSE.....	St. Paul
GEORGE JEHU.....	Hastings
E. DE BELL.....	Sioux Falls, Dak.
P. C. SHERAN.....	St. Paul
W. L. WILSON.....	St. Paul
C. H. PRESCOTT.....	St. Paul

HONORARY MEMBERS FOR FIVE YEARS.

MISS HOETENSE SHARE, from 1880.....	Rosemount
MRS. L. E. P. SPRAGUE, from 1880.....	Minneapolis
MRS. ISAAC ATWATER, from 1880.....	Minneapolis
MRS. W. R. MURRAY, from 1881.....	Lake City
GEORGE J. KELLOGG, from 1882.....	Janesville, Wis.
G. P. PUTNAM, from 1882.....	Ash Ridge, Wis.

HONORARY LIFE MEMBERS.

HON. MARSHALL P. WILDER.....	Boston, Mass.
DR. JOHN A. WARDER (deceased).....	North Bend, Ohio
DR. P. A. JEWELL (deceased).....	Lake City
HON. L. B. HODGES (deceased).....	St. Paul
HON. N. J. COLMAN.....	St. Louis, Mo.
GEORGE P. PEFFER.....	Pewaukee, Wis.
J. C. PLUMB.....	Milton, Wis.
J. M. SMITH.....	Green Bay, Wis.
E. WILCOX.....	La Crosse, Wis.
PROF. J. L. BUDD.....	Ames, Ia.
A. G. TUTTLE.....	Baraboo, Wis.
F. K. PHENIX.....	Delavan, Wis.
J. W. MANNING.....	Redding, Mass.
MRS. J. W. MANNING.....	Redding, Mass.
MRS. WM. PAIST.....	Hersey
CHARLES Y. LACY.....	Fort Benton, M. T.
COL. J. H. STEVENS.....	Minneapolis
J. S. HARRIS.....	La Crescent
R. J. MENDENHALL.....	Minneapolis
TRUMAN M. SMITH.....	St. Paul
L. M. FORD.....	St. Paul
WYMAN ELLIOT.....	Minneapolis
CHARLES HOAG.....	Minneapolis
J. T. GRIMES.....	Minneapolis
MRS. C. O. VAN CLEVE.....	Minneapolis
A. W. SIAS.....	Rochester
PETER M. GIDEON.....	Excelsior
MRS. WEALTHY GIDEON.....	Excelsior
D. W. HUMPHREY.....	Faribault
M. PEARCE.....	Minneapolis
R. L. COTTERELL.....	Dover Center
CHAS. LUDLUFF.....	Carver
MRS. JAMES BOWEN.....	Minneapolis
MRS. IDA E. TILSON.....	West Salem, Wis.
MRS. H. B. SARGEANT.....	Lake City
MISS SARAH MANNING.....	Lake City
COL. D. A. ROBERTSON.....	St. Paul

OFFICERS
OF THE
MINNESOTA STATE AGRICULTURAL SOCIETY.

FOR THE YEAR 1885.

PRESIDENT.

N. P. CLARKE. St. Cloud

VICE-PRESIDENTS.

C. A. DEGRAFF.....Janesville

C. P. BAILEY.....Duluth

SECRETARY.

R. C. JUDSON.....Farmington

TREASURER.

F. J. WILCOX.....Northfield

BOARD OF MANAGERS.

JAS. McHENCH.....Fairmount

J. S. HARRIS.....La Crescent

ADAM BOHLAND.....St. Paul

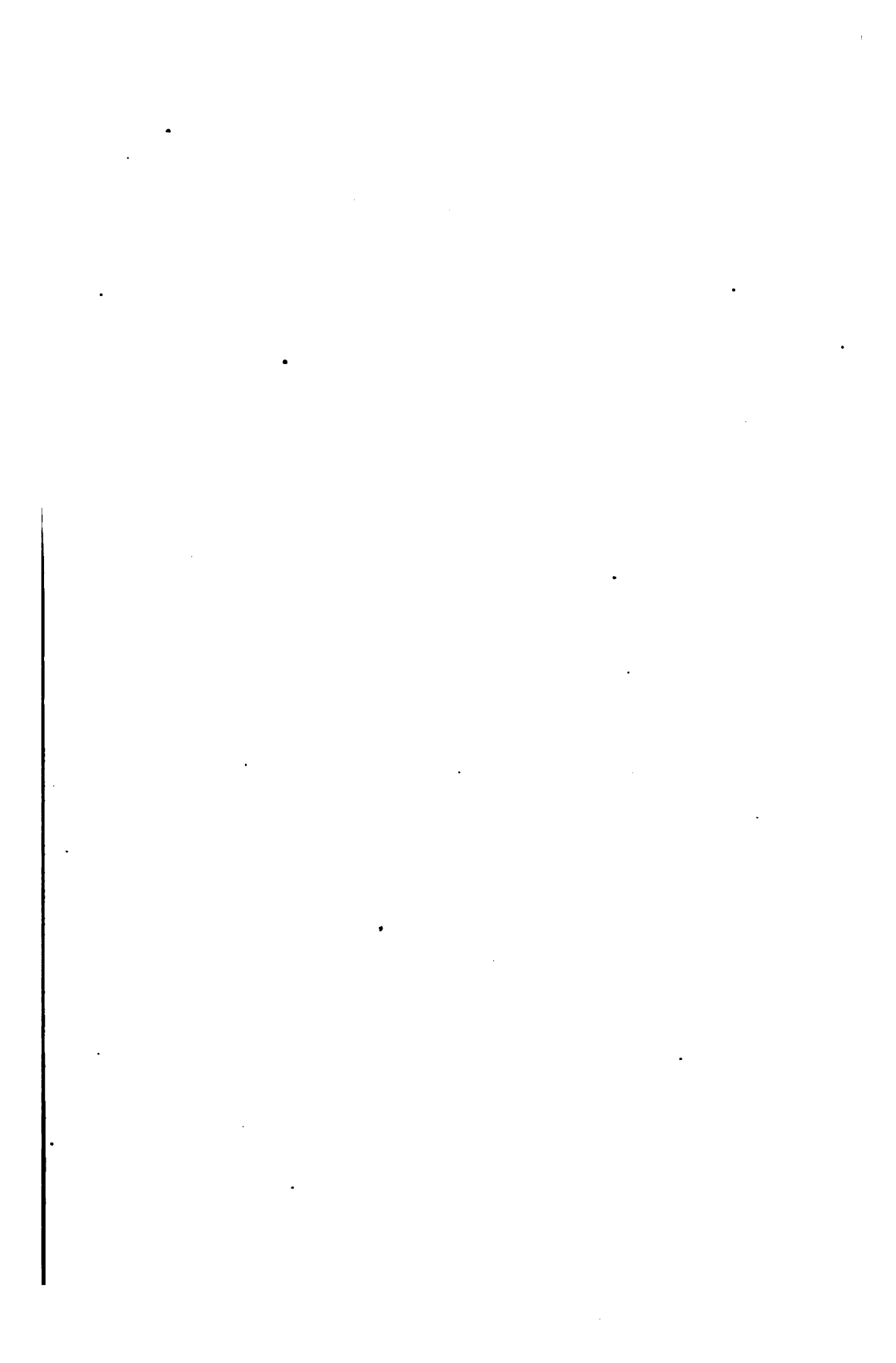
CLARKE CHAMBERS.....Owatonna

JOHN COOPER.....St. Cloud

JOHN F. NORRISH.....Hastings

The next Annual Fair will be held on the new State Fair Grounds between Minneapolis and St. Paul, Sept. 7 to 12, 1885. No efforts will be spared to make it the greatest and best agricultural and horticultural exposition of the year.

Liberal premiums offered in every department.



CONSTITUTION

OF THE

MINNESOTA HORTICULTURAL SOCIETY.

ARTICLE I.

NAME.

This society shall be known as the Minnesota State Horticultural Society.

ARTICLE II.

OBJECT OF THE SOCIETY.

The object of this society shall be to improve the condition of pomology, horticulture and arboriculture, by collecting and disseminating correct information concerning the culture of such fruits, flowers, trees, and other productions in horticulture as are adapted to the soil and climate of Minnesota.

ARTICLE III.

MEMBERSHIP.

Any person may become a member by paying to the Secretary or treasurer an annual fee of one dollar, or a life member by the payment of ten dollars. Honorary members, for a time stated or for life, may be elected at any annual meeting by a two-thirds vote of the society, and shall be entitled to all the rights and privileges of membership.

ARTICLE IV.

OFFICERS.

Its officers shall consist of a president and one vice president from each congressional district, a secretary, treasurer, and an executive committee of five, and a librarian.

ARTICLE V.

DUTIES OF PRESIDENT AND VICE PRESIDENTS.

The President shall preside at and conduct all meetings of the society, and deliver an annual address, and in his absence the Vice Presidents, in their order, shall perform the same duties. They shall also have a general supervision of the horticultural interests in their respective districts, and make a written report to the society as its annual winter meeting; in consideration of which the society shall pay their traveling expenses to the same.

ARTICLE VI.

THE SECRETARY.

The Secretary shall record all the doings of the society, collate and prepare all communications, etc., for the public press, and pay over all moneys received from members or otherwise to the treasurer on his receipt; receive and answer all communications addressed to the secretary, establish and maintain correspondence with all local, county, district and state horticultural societies, and secure by exchange their transactions, as far as possible; to aid the president as an executive officer in the dispatch of business relating to meetings of the society, notices of horticultural and similar meetings of general interest, and report to the annual meeting of the society an abstract of the matter that has come into his possession, which, with its approval, shall become part of its transactions for the current year.

ARTICLE VII.

THE TREASURER.

The Treasurer shall collect and hold all funds of the society, and pay out the same only on the order of the president, countersigned by the secretary. He shall make up a report of all

the receipts and disbursements of the society, and present the same at the annual winter meeting, or at any other time when called upon to do so by the executive committee. He shall give bonds in such sum as the society may direct, to be approved by the president and secretary, and the bond when so approved shall be filed with the state auditor.

ARTICLE VIII.

ELECTION OF OFFICERS.

The officers shall be elected separately and annually by ballot, and hold their office until their successors are elected.

ARTICLE IX.

MEETINGS OF THE SOCIETY.

The society shall hold annual sessions on the third Tuesday of January, and other meetings at such time and place as the society may direct.

ARTICLE X.

THE LIBRARIAN.

The librarian shall have charge of the library and report its condition at each annual meeting.

ARTICLE XI.

AMENDMENTS.

By-laws and alterations of the constitution, for the purpose of meeting the further wants of the society, may be enacted by a vote of two-thirds of the members present at any regular annual meeting, and on one day's notice of the same being given.

BY-LAWS.

1. The president, at each annual meeting of the society, shall appoint a general fruit committee, consisting of two members from each congressional district in the State, and it shall be the duty of each member to make a written report annually upon the fruit crop, and a limited list of fruits best adapted for general cultivation in their respective districts.

2. The president, secretary and treasurer shall be members *ex officio* of the executive committee, who shall have charge of all matters pertaining to the interests of the society.

3. The executive committee may call a meeting of the society at any time they may deem advisable, giving at least thirty days' notice through the public press.

4. The executive committee shall appoint a committee on seedlings, on nomenclature, on forestry, on fruit blossoms, on Russian apples, on gardening, on small fruits, and on floriculture.

5. The five members of the executive committee, not including the president, secretary or treasurer, shall be a committee on finance, and it shall be their duty to audit all bills before they shall be ordered paid by the president and secretary.

6. The executive committee shall see that a program is issued for each meeting of the society, at least one month before the winter meeting and ten days before the summer meeting.

7. Every member shall be entitled to one copy of the transactions as often as published, on which postage shall be paid; but in the distribution of all other copies the party receiving the same shall pay the postage; where several copies are sent to auxiliary societies it shall be discretionary with the secretary to pay the freight.

8. *Quorum*—A quorum shall consist of nine members of the society, or a majority of the executive committee.

MINNESOTA STATE HORTICULTURAL SOCIETY.

TRANSACTIONS 1884-5.

THE SUMMER MEETING, 1884.

It should be stated here that no report was received of the proceedings of the summer meeting from ex-secretary Gibbs, and the following report has been prepared from such data as could be obtained from the daily papers and other sources of information. Mr. Gibbs, writing from New Orleans under date of March 28, 1885, states that the report was handed to his clerk on or about February 4th, with directions to be mailed to the secretary of the Horticultural Society, and if not received must have been misdirected; but that he had not preserved the notes from which the report was made up. He says in closing: "I am sorry that absorbing duties here, together with weakness from recent severe illness, prevent me from contributing more to your report for 1885, but I presume you have abundant material, and will make the report equal to, and I hope better than, any of its predecessors."

The call for the summer meeting announced that the session would be held at Market Hall, Minneapolis, on Tuesday and Wednesday, June 24 and 25, 1884, for the exhibition of small fruits, flowers and early vegetables. The public were cordially invited, free entertainment promised to members in attendance by the citizens of Minneapolis, and the usual reduced rates upon the railroads to members returning to their homes.

PROGRAM.

FIRST DAY—TUESDAY, JUNE 24.

ENTRIES FROM 9 A. M. TO 3 P. M.—NONE LATER.

At 2 P. M.—Opening exercises, addresses, volunteer papers, question box and discussions.

Appointment of judges on premiums.

SECOND DAY,—WEDNESDAY, JUNE 25.

The exhibition will open at 9 A. M. Premiums announced and paid at 10 o'clock.

The meeting will be informal and social, and at 12 M. the exhibitors, members and invited guests will confiscate the entire display of fruits for the purposes of a basket picnic dinner.

At 2 P. M.—Addresses, question box, volunteer papers and discussions, general business, and final adjournment, or such other exercises as may be agreed upon.

OLIVER GIBBS, JR.,

Lake City,

Secretary.

TRUMAN M. SMITH,

St. Paul,

President.

PREMIUM LIST.

WYMAN ELLIOT, Superintendent of Exhibits.

STRAWBERRIES.

Best display, not less than six varieties. 1st premium, \$5; 2d, \$4;
3d, \$3; 4th, \$2.

Best variety for general market, \$3.

Best variety for home use, perfect in flower, \$3.

Best three plants in bearing, grown in pots, \$3; 2d, \$2.

	1st Prem.	2d Prem.
Best quart Wilson's Albany.....	\$1 00	50 cts.
Best quart Charles Downing.....	1 00	50
Best quart Downer's Prolific.....	1 00	50
Best quart Green Prolific.....	1 00	50
Best quart Crescent Seedling.....	1 00	50
Best quart Captain Jack.....	1 00	50
Best quart Cumberland Triumph.....	1 00	50
Best quart Miner's Great Prolific.....	1 00	50
Best quart Red Jacket.....	1 00	50
Best quart Pioneer.....	1 00	50
Best quart Glendale.....	1 00	50
Best quart Endicott No. 2	1 00	50
Best quart Sharpless.....	1 00	50
Best quart Manchester.....	1 00	50
Best quart Bidwell	1 00	50
Best quart Minnetonka Chief.....	1 00	50
Best quart Hart's Minnesota Seedling.....	1 00	50
Best quart Kentucky.....	1 00	50
Best quart Windsor Chief.....	1 00	50
Best quart Boyden	1 00	50
Best quart James Vick	1 00	50
Best quart Iowa Prolific.....	1 00	50
Best quart variety not herein named.....	1 00	50

CHERRIES.

	1st Prem.	2d Prem.
Best quart Early Richmond.....	\$2 00	\$1 00
Best quart any other variety.....	2 00	1 00

Strawberries and Cherries will be displayed on tea-plates to be furnished by the Society.

PLANTS AND FLOWERS.

Best display greenhouse plants.....	10 00	5 00
Best display roses in pots.....	2 00	1 00
Best display fuchsias.....	2 00	1 00
Best display geraniums.....	2 00	1 00
Best floral design in cut flowers.....	2 00	1 00
Best basket cut flowers.....	2 00	1 00
Best hand bouquet cut flowers.....	2 00	1 00
Best bouquet of roses.....	2 00	1 00
Best single plant in bloom.....	2 00	1 00

VEGETABLES.

Best display.....	5 00	3 00
Best half peck green peas.....	1 00	50
Best half peck string beans.....	1 00	50
Best six bunches onions.....	1 00	50
Best six bunches beets.....	1 00	50
Best six bunches radishes.....	1 00	50
Best six bunches carrots.....	1 00	50
Best six bunches turnips.....	1 00	50
Best six bunches asparagus	1 00	50
Best three heads cabbage	1 00	50
Best three heads cauliflowers.....	1 00	50
Best three heads lettuce	1 00	50
Best three bunches kohl rabi.....	1 00	50
Best six cucumbers.....	1 00	50
Best six stalks pie plant	1 00	50

The exhibition is open in all departments to growers in Minnesota, Wisconsin, Dakota, and Northern Iowa.

M. PEARCE,

J. T. GRIMES,

WYMAN ELLIOT,

Com. of Arrangements, Minneapolis.

PROCEEDINGS AT THE SUMMER MEETING.

TUESDAY, JUNE 24, 1884.

The summer meeting of the Minnesota State Horticultural Society was opened at 3:30 o'clock, P. M., Tuesday, June 24th, and was called to order by President Truman M. Smith of St. Paul, who expressed regret at the apparent lack of interest in the meeting as shown by the number of people in attendance, especially from Minneapolis. He did not see what could be done under the circumstances except to discuss questions of interest to horticulturists as best they could; he did not doubt that other exhibitors would be present at the meeting in the morning if entries were permitted to be made at that time. He stated that there had been a good deal of interest taken usually at the summer meetings, but if the number present was an indication of the interest manifested in horticulture it was certainly at a low ebb.

Col. J. H. Stevens thought the present time an unfortunate one as there were so many counter attractions to draw people away, and our French citizens, among whom were found some of the best fruit and flower growers, were celebrating the day.

Secretary Gibbs said that in previous years the first day's session had often been a poor one while on the following day the attendance might be good and exhibits large. He then offered the following resolution as a solution of the unexpected difficulty:

Resolved, That the entries be extended till 9 A. M. to-morrow, but the judges shall make allowance on products exhibited in favor of those who have entered within the rule, other things than condition being equal, and that a list of fruits, flowers and vegetables put on exhibition to-day shall be furnished to the judges for comparison with those made under the extension of time.

Mr. Peter M. Gideon opposed the resolution and said he thought the fruits on the tables would not bear a favorable comparison with those that might be brought in the morning, and it would be an injustice to those who had been promptly on hand with their exhibits.

Mr. Wyman Elliot was opposed to any action being taken which would be unjust towards prompt exhibitors, but thought the matter could be arranged satisfactorily.

Mr. J. T. Grimes thought exhibits brought in the morning should be placed on a separate table, and the judges in making inspections should take into consideration the causes of difference, if any, in the condition, and that at future meetings of the society the articles should actually be on exhibition when entries were made.

The resolution of Mr. Gibbs was then adopted, as was the following, offered by Mr. Grimes:

That all articles entered be allowed premiums in their different classes if considered worthy by the viewing committees, such premiums not to exceed those offered in the regular list of premiums.

It was moved that the president be authorized to appoint committees to view exhibits made in the three departments of fruits, flowers and vegetables, but after discussion he was granted till 9 o'clock Wednesday morning to make up the list of committeemen, and the motion was then adopted.

Mr. M. Pearce of Minneapolis, announced that the Hennepin County Horticultural Society was preparing to make a public exhibition of grapes and apples this fall, and asked the co-operation and assistance of kindred societies throughout the State. He said the exhibit would be largely made up from farms near Lake Minnetonka, and it was believed that it would be entirely successful.

On motion of Mr. Gibbs the chair was empowered to appoint a committee of three from the State society to attend the meeting referred to, and Messrs. A. W. Sias, Oliver Gibbs, Jr., and G. H. Howe were appointed as such committee.

Secretary Gibbs notified the society that F. G. Gould of Excelsior, had been appointed to superintend the horticultural exhibits of Minnesota at the world's fair, to be held in New Orleans next winter, \$1,000 having been appropriated by the State Board of Collective Exhibits department to defray the expenses of the Minnesota exhibit at New Orleans.

GROWING SMALL FRUITS.

The secretary announced that the exhibit of strawberries will be much larger at the morning session, and suggested that growers make a statement of important discoveries made in strawberry culture during the past year.

Col. D. A. Robertson, of St. Paul, being called on, referred to the growing interest in horticultural pursuits, giving special credit to the services of Nicholas Longworth, of Cincinnati, in producing a spirit of rivalry in horticultural work. The race from which we have a descent began horticultural work in their gardens, and the production of fruit-bearing vines—the grape especially—had been made a success in Ohio and Indiana after repeated failures. The successful introduction of grapes and small fruits from seedlings still remains a theme of the utmost consequence to the entire horticultural interest of Minnesota. This great work, however, must not be done by practical men, but by amateurs who have the time, wealth and disposition to indulge in experiments for the benefit of others.

Mr. A. W. Sias, of Rochester, mentioned the sale of one hundred dollars worth of seedling apple trees to an Olmsted county man about ten years ago; four years ago these trees bore fruit as large as the Baldwin, and equally bright in color and palatable in flavor; he has grafted from the new seedling, and on the twigs day before yesterday were found blossoms.

Col. Robertson thought the blossoms on these infantile shoots should be taken off, because there was danger of precocity in the limbs of trees, as well as elsewhere; plants must be adapted to climate and other conditions, and our fruit trees can be made successful only by careful selections from the seedlings.

Secretary Gibbs announced that the reports of the last meeting of the society were now ready for distribution and could be obtained by calling on him in the morning.

Among the list of those making entries for premiums, during the day, were the following:

Strawberries—T. M. Smith, Oliver Gibbs, Jr., Frank Abernathy, P. M. Gideon, M. J. Hoag, A. W. Sias, W. H. Brimhall, J. T. Grimes, Wyman Elliot, Geo. S. Woolsey, F. G. Gould; thirty-seven entries.

Plants and Flowers—Mrs. Truman M. Smith, J. T. Grimes, Mendenhall Greenhouse; eleven entries.

Vegetables—J. S. Gray, J. T. Grimes, Fred. Busch, Wyman Elliot; twenty three entries.

The exhibit was somewhat meagre and imperfect, but included a fine floral display from the State University and about eighteen specimens of strawberries, principally from Lake Minnetonka.

The meeting adjourned until 9 o'clock Wednesday morning.

SECOND DAY.

WEDNESDAY, JUNE 25, 1884.

There was a largely increased attendance at the meeting of the society Wednesday morning over that of the previous day. Many additional entries were made. Nine entries were added to the list under the head of strawberries and about as many more of plants, flowers and vegetables. The list was closed at nine o'clock.

The meeting was called to order by President Smith shortly before ten o'clock, who announced the appointment of the following judges to examine the exhibits made and award premiums:

COMMITTEES ON PREMIUMS.

Fruits—M. Pearce, G. H. Howe, of Minneapolis; and M. C. Bunnell, of Newport.

Flowers—E. S. Spaulding, C. H. Burwell, of Newport; and A. W. Sias, of Rochester.

Vegetables—H. F. Busse, of Minneapolis; J. A. Ford, of Newport; and E. P. C. Fowler, of Lake City.

The judges went to work upon the examination of the various exhibits, but it was noon before the official announcement of awards was made of premiums by the secretary.

There were about fifty persons present, including a number of ladies, during the day, and among horticulturists present may be mentioned Truman M. Smith, president of the society; Secretary Oliver Gibbs, Jr., of Lake City, with his wife; J. T. Grimes, treasurer; P. M. Gideon, superintendent of the State

experimental Fruit Farm; F. G. Gould, Excelsior, horticultural delegate to the New Orleans Exposition; Wyman Elliot, Col. J. H. Stevens, of Minneapolis; W. E. Brimhall, Col. D. A. Robertson, St. Paul; J. S. Gray, M. Pearce, W. J. Abernethy, Minneapolis; M. W. Cook, A. W. Sias, M. J. Hoag, Rochester; Fred. Busch, George Labbett and wife, Wm. Lyons, C. H. Burwell, Charles H. Clarke, H. F. Busse, E. S. Spaulding, G. T. Gibbs and wife, Lake City; J. W. Manning and wife of Redding, Massachusetts; Lewis Chase, of Rochester, New York.

One of the most interesting features among the exhibits was sixteen boxes of strawberries of the Wilson variety, displayed by F. G. Gould, of Excelsior, grown near Lake Minnetonka, which were considered equal to any similar exhibit ever made in the State. Secretary Gibbs, of Lake City, also had a very fine display of Wilsons. Another interesting feature was a creditable display of blooming plants, cut flowers and floral designs from the Mendenhall greenhouse, of Minneapolis. This occupied a table forty-five feet long and three feet wide, at one end of the hall, and was the occasion of many complimentary remarks, both on account of the perfection of the plants and the arrangement of the display. The two most noticeable floral designs were a lyre of white roses and pansies, from the Mendenhall greenhouse, and a large and most exquisite platter of pansies, arranged in designs by color, displayed by Geo. S. Woolsey, of Minneapolis. A beautiful display of roses, by Mrs. T. M. Smith, of St. Paul, was also much admired.

PREMIUMS AWARDED.

The judges having made their awards, the list of premiums was read as follows:

STRAWBERRIES.

Wilson.—F. G. Gould, Excelsior, best display, first premium; George J. Kellogg, Janesville, Wis., second. General Market Variety, Oliver Gibbs, Jr., Lake City, first premium. F. G. Gould, Excelsior, best quart, first premium; W. H. Brimhall, St. Paul, second.

Downer's Prolific.—M. J. Hoag, Rochester, best quart, first premium; William Lyons, Minneapolis, second.

Crescent Seedling.—M. J. Hoag, Rochester, best quart, first premium; J. T. Grimes, second.

Cumberland Triumph.—A. W. Sias, Rochester, best quart, first premium; F. W. Abernethy, Minneapolis, second.

Glendale.—Oliver Gibbs, Jr., Lake City, best quart, first premium; Wm. Lyons, Minneapolis, second.

Endicott No. 2.—Oliver Gibbs, Jr., Lake City, best quart, first premium.

Mount Vernon.—P. M. Gideon, Excelsior, best quart, first premium.

Sharpless.—A. W. Sias, Rochester, best quart, first premium.

Manchester.—J. A. Ford, Newport, best quart, first premium.

Minnetonka Chief.—Wyman Elliot, Minneapolis, best quart, first premium.

Windsor.—William Lyons, Minneapolis, best quart, first premium.

James Vick.—F. G. Gould, Excelsior, best quart, first premium.

Jersey Queen.—P. M. Gideon, Excelsior, best quart, first premium.

Iowa Prolific.—Truman M. Smith, St. Paul, best quart, first premium.

PLANTS AND FLOWERS.

Greenhouse Display.—Mendenhall Greenhouse, first premium.

Display Fuchsias.—Mendenhall, first premium.

Floral Design.—Mendenhall, first premium.

Display Geraniums.—Mendenhall, first premium.

Basket Out Flowers.—Mrs. T. M. Smith, St. Paul, first premium; Mendenhall second.

Hand Bouquet.—Mendenhall, first premium.

Bouquet Roses.—Mrs. T. M. Smith, St. Paul, first premium; Mendenhall second.

Single Plant in Bloom.—Mendenhall, first premium.

Hybrid Perpetual Roses.—F. G. Gould, Excelsior, first premium; J. T. Grimes, Minneapolis, second.

A fine collection of roses from Mrs. W. G. Hendrickson, of St. Paul, was received too late for entry.

VEGETABLES.

Best Display.—J. S. Gray, Minneapolis, first premium; Wyman Elliot, Minneapolis, second.

Green Peas.—Wyman Elliot, Minneapolis, first premium.

Carrots.—Wyman Elliot, Minneapolis, first premium.

Asparagus.—J. T. Grimes, Minneapolis, first premium; Wyman Elliot, Minneapolis, second.

Cabbage.—Wyman Elliot, Minneapolis, first premium.

Cauliflower.—Wyman Elliot, Minneapolis, first premium; Fred Busch, Richfield, second.

Lettuce.—J. S. Gray, Minneapolis, first premium; Wyman Elliot, Minneapolis, second.

Pie-plant.—State farm, first premium; Wyman Elliot, Minneapolis, second.

Early Vanguard Potato.—William Lyons, Minneapolis, first premium.

The award of premiums seemed to give general satisfaction and were paid at once by the treasurer. The total amount paid was \$77, of which \$29.50 was on flowers, \$19.50 on vegetables, and \$28 on strawberries.

After the awards were made Geo. S. Woolsey, of Minneapolis, arrived with some fine specimens of seedling strawberries and a display of pansies. His tardiness being explained that he understood the meeting was to be held at the agricultural hall of the State university, the society voted to award him a special premium of \$10 for his excellent display.

After the premiums were paid the meeting was turned into a basket picnic, and the fruits on exhibition confiscated and served up with cream, etc.

AFTERNOON SESSION.

WEDNESDAY, June 25, 1884.

At 2 o'clock, P. M., the meeting was called to order by President Smith, and several matters of business announced.

A bill for printing programs, and bills for other incidental expenses, amounting to \$15, were ordered paid.

Secretary Gibbs asked for an appropriation of \$100 for post-

age and incidental expenses, in addition to the \$100 allowed at a previous meeting, which was allowed by a unanimous vote.

EXTENDING THE WORK.

Secretary Gibbs raised the question whether some action should not be taken looking toward a furthering of the interests and influence of the society, by securing new members, distributing reports, exchanging products, and working up exhibits. He advocated the gathering of scions and specimens by some authorized person or persons, depositing them at some defined place and carrying on experiments. He said that systematic work was necessary to settle many of the disputed questions of pomology and advance the interests of horticulture in the Northwest.

Prof. E. D. Porter heartily approved of the suggestion, and urged the importance of taking prompt action in the matter. He said it was with a view to encouraging such enterprises that the State had established the experimental farm. In this the society has a place, and the State also offers to supervise experiments; but it has made no provision for the collection of the material for the experiments. He recommended that a standing committee be appointed to attend to this matter and make thorough work of it. He cited some instances of successful experimental institutions, and spoke of the great opportunities offered in this region, which have been developed to a very limited extent. He maintained that the native fruits should form the basis of operations, referring particularly to the native plum, cranberry, blueberry, and apple.

Col. D. A. Robertson, of St. Paul, inquired if he would go back again to the native sour and bitter crab, or take up the line where we now have it.

Prof. Porter in reply, said that the latter plan would of course be the wiser. Notwithstanding the gold medal taken by the Minnesota apples at Philadelphia, he insisted that the ideal apple adapted to this climate has not yet been found. He hoped the society would take hold of this matter, and was confident that any efforts in this direction would be amply rewarded.

Mr. Gideon, superintendent of the State Experimental Fruit Farm, answered a number of inquiries about his seedlings, and gave a statement of the results arrived at thus far, and described the manner in which the work had been conducted during the

past six years. He stated that many of his grafts had died the past year from some cause which he was unable to explain.

Mr. Pearce thought the trouble was mainly from weak roots and not from a lack of hardiness. He thought we should grow our own varieties of apples to be obtained of our local nurserymen, rather than to purchase trees from unknown and irresponsible sources.

Secretary Gibbs stated that at the last meeting he was authorized to search out new and valuable seedlings, procure scions, etc., but that no appropriation other than fifty dollars for the purchase of scions, had been made. He did not feel called upon at a salary of four hundred dollars a year to give more of his time than his duties as secretary required, and hence should decline to do this extra labor unless an adequate appropriation were to be made.

Prof. Porter thought the present finances of the society would not warrant a further appropriation this year. He thought horticulturists would be able to secure much profit incidentally from investigations about to be made in preparing the collective exhibit for New Orleans. He moved that no special appropriation be made at present.

Treasurer Grimes called attention to the financial condition of the society in absence of \$500 to which it is entitled from the State. The receipts of the society had been \$1,218.29, and the disbursements \$950.39, leaving a balance on hand of \$267.90; but after deducting \$200 now due, there will be only \$67.90 on hand and actually available.

On motion, the treasurer was authorized to borrow funds belonging to the permanent fund, to meet current expenses, and defer adding to that fund until the first of January, 1885.

Mr. J. W. Manning, of Redding, Mass., a member of the American Pomological Society, was introduced and he and his wife were made honorary life members of the society. He expressed thanks for the honor, and complimented the society on the excellent exhibit made.

A SOUTHERN EXHIBITION.

Mr. F. G. Gould, of Excelsior, who has charge of the collection to be made in this State for an exhibit in the New Orleans exhibition next winter, stated the plan that was being pursued. He said it was proposed to have specimens of every variety of fruit grown in the State, and requested the co-operation of members

of the society in the matter. He advocated the pickling or preserving of early small fruits and the duplicating of all exhibits.

Prof. Porter gave some suggestions for the preparation of specimens, advising fruit growers to clean certain limbs of apple trees from insect depredations, and wrap specimens for exhibition with tissue paper. He advised the girdling of grape vines, or branches bearing the fruit to be exhibited, by means of which a larger and much better growth might be secured. For gooseberries and some other small fruits he recommended the English plan of setting a saucer of water underneath.

Mr. Elliot gave some suggestions as to the boxing and shipping of fruits, advising the use of parafine paper for wrapping, and very careful boxing and handling.

Secretary Gibbs deprecated the usual carelessness of experienced horticulturists in the shipment of fruit, and said he did not know what might be expected from the average farmer.

Mr. Sias, from the committee on the exhibition of fruits, etc., to be made by the Hennepin County Horticultural Society, reported favorably upon the proposition and the report was adopted.

Secretary Gibbs called attention to the law requiring local horticultural societies to make annual reports, the same to be incorporated in the transactions of the society, and stated that he had never received such reports from secretaries of such organizations.

Secretary Gibbs moved that a vote of thanks be returned to the people of Minneapolis, to local committees on entertainment, for hospitality, and to the railroads for reduced rates of transportation. The motion was adopted.

A gentleman asked the question whether the variety of apple trees known in New York as "Iron Clads" were not grown as well in Minnesota, when transplanted, as the native trees.

Mr. Gideon gave it as his opinion that the trees would succeed equally well in Minnesota, with proper attention and in favored localities.

Col. D. A. Robertson expressed the opinion that growth depended upon climatic influences almost exclusively. It is warmer in Minnesota in summer than in Philadelphia, but the winters are more rigorous here than there, and the only robust trees in Minnesota are raised from the seed. Those coming from remote districts are invariably subjected to great dangers in change of location from their native soil, and he had no confidence in eastern trees when transplanted to Minnesota.

On motion the meeting then adjourned subject to the call of the executive committee.

MEETING OF EXECUTIVE COMMITTEE.

A meeting of the executive committee was held at No. 22 Bridge Square, Minneapolis, at 2 o'clock P. M., Jan. 18, 1885.

The following members were present: President T. M. Smith, J. M. Underwood, J. S. Harris and Cyrus L. Smith.

A letter was read from Secretary Gibbs stating that he would be unable to attend the annual meeting.

President Smith appointed J. S. Harris, J. M. Underwood and C. L. Smith a committee to arrange a program for the Annual Winter Meeting.

On motion of Mr. Underwood it was voted to employ S. D. Hillman, of Minneapolis, as stenographer to report the discussions and proceedings at the annual meeting, at a compensation of five dollars per day and ten cents per folio.

The President was authorized to procure plates for the exhibition of fruits.

The committee on program presented a report which was adopted.

C. L. Smith was directed to procure the printing of two hundred and fifty copies of program, also one hundred copies of blank railroad certificates.

Adjourned till 9 o'clock, A. M., Jan. 20, 1885.

MINNESOTA
STATE HORTICULTURAL SOCIETY.

EIGHTEENTH ANNUAL MEETING,

AT THE

State Capitol, St. Paul, Minnesota,

TUESDAY, WEDNESDAY THURSDAY AND FRIDAY,

JANUARY 20, 21, 22 AND 23, 1885.

PROGRAM.

MORNING, AFTERNOON AND EVENING SESSIONS,

9 A. M., 2 P. M. AND 7 P. M.

The following order will be adhered to as nearly as circumstances will permit, but may be varied from time to time as the Society may think best.

FIRST DAY—TUESDAY, JANUARY 20th, 10 A. M.

Opening exercises.

Arrangement of exhibits.

2 P. M.—Appointment of special committees. Partial report of standing Fruit Committee.

3 P. M.—Paper on Small Fruit, by
CYRUS L. SMITH, of Minneapolis.
Strawberries on a Prairie Farm, by
M. CUTLER, of Sumter, McLeod County.
Notes from the Fruit Garden, by
WILLIAM HENRY BRIMHALL, St. Paul.
Question Box.

EVENING SESSION.

7 P. M.—President's Address, TRUMAN M. SMITH, St. Paul.

SECOND DAY—WEDNESDAY, JANUARY 21st.

9 A. M.—Paper on Apples, by
MRS. J. M. UNDERWOOD, of Lake City.
M. PEARCE, of Minneapolis, and
SIDNEY CORP, of Hammond, Wabasha County.
Revision of Fruit List.
Discussion.

AFTERNOON SESSION.

2 P. M.—Market Gardening.
J. S. HARRIS, of La Crescent.
KNIGHT H. WHIPPLE, of Northome.
J. S. GRAY, of Minneapolis, and
FRED. BUSCH, of Richfield.
Discussion.
Question Box.

EVENING SESSION.

7 P. M.—Lecture, Travels in Europe, by
PROF. TOUSLEY, of Minneapolis.
A paper on Seeds, by J. E. NORTHRUP, of Minneapolis.
Paper on Ginseng, by COL. J. H. STEVENS, of Minneapolis.

THIRD DAY—THURSDAY, JANUARY 22d.

MORNING SESSION.

9 A. M.—Correspondence; reports of Committee on Russian Apples.

Report of Treasurer,

J. T. GRIMES, Minneapolis.

Report of Secretary,

OLIVER GIBBS, JR., Lake City.

Question Box.

AFTERNOON SESSION.

2 P. M.—Report of Finance Committee.

Election of officers.

Report of Committee on Legislation.

Discussion of plan of work for ensuing year.

Question Box.

EVENING SESSION.

7 P. M.—Window Gardening, by

W. C. KILVINGTON, of Minneapolis.

Greenhouse and bedding Plants,

R. J. MENDENHALL, of Minneapolis.

Roses, by

C. L. SMITH, of Minneapolis.

This is Floral session, and it is hoped that all lovers of flowers will avail themselves of this opportunity of learning how to beautify their homes.

FOURTH DAY—FRIDAY, JANUARY 23d.

MORNING SESSION.

9 A. M.—Report of Entomologist,

R. J. MENDENHALL.

10 A. M.—A paper on Grapes,

N. J. STUBBS.

Grape report, from

J. N. NORQUIST, of Red Wing.

Question Box.

AFTERNOON SESSION.

2 P. M.—Birds in Horticulture, by

E. E. HARRIS, of La Crescent.

Deferred Business.

EVENING SESSION.

7 P. M.—Forestry Session. Opening by PROF. S. H. FOLSOM. The Effects of Trees on Climate, and their Relation to Rainfall; followed by discussion on tree planting on the prairies; variety of timber; necessary legislation, etc.

Report of Committee on Final Resolutions.

During the session we expect addresses from Gov. L. F. Hubbard, Gen. Wm. G. Le Duc, and others; reports from Iowa and Wisconsin horticultural societies; also from several local societies.

We urge all members and friends to contribute to the exhibition, fruits, flowers, vegetables, woods, seeds, works of art, etc.

Liberal premiums will be awarded on all articles deemed worthy of merit.

The public are cordially invited to attend. For further information address President Truman M. Smith, St. Paul, or Committee on Arrangements and Program,

J. M. UNDERWOOD, Lake City,

J. S. HARRIS, La Crescent,

C. L. SMITH, 22 Bridge Square,
Minneapolis.

ANNUAL WINTER MEETING
OF THE
MINNESOTA
STATE HORTICULTURAL SOCIETY
AND THE
MINNESOTA AMBER CANE ASSOCIATION.

HELD AT THE STATE CAPITOL, ST. PAUL, MINNESOTA, JAN.
20, 21, 22 AND 23, 1885.

The eighteenth annual meeting of the Minnesota State Horticultural Society and the eighth annual meeting of the Minnesota Amber Cane Association met in joint session, at room number sixteen at the capitol, at 11 o'clock A. M., Jan. 20, 1885, and was called to order by Hon. Truman M. Smith, president of the Horticultural Society.

Capt. Russell Blakeley, president of the Minnesota Amber Cane Association, made the address of welcome. He said:
Gentlemen of the Horticultural Society and Minnesota Amber Cane Association:

It is a matter of much gratification to me to have the opportunity of meeting you upon this occasion. It seems to be very fitting and proper that these two associations should have the

support and encouragement of the State legislature, and therefore very proper that those of us who are permitted to attend this gathering should meet at this time at the State capitol. That reason has induced the two associations to co-operate for this purpose. We also do it for another purpose. We hope during the present winter that some action may be taken towards providing a permanent home for the agricultural interests of the State, and hope that if this is accomplished the Horticultural Society and the Amber Cane Association may have a permanent place for holding their meetings. Some of us have taken no little degree of interest in regard to this matter and want to see the interests of these societies advanced, and we have grounds for hope and confidence of success in what we have attempted to do, and we expect to see established a permanent future home for these industries of the State. As a means to this end we have thought it desirable that these meetings be held here where members would be able to meet the representatives of their several localities, as well as those of other localities, and enable them to understand the true interests of these associations.

We hope this meeting will be one of interest and benefit to all, and may be of advantage to you and to those who come after you. I have no doubt, from my knowledge of the associations in the past, that we shall be enabled to accomplish something to aid us in taking and keeping the position we have attained as one of the most successful, notwithstanding our position geographically, for the products we represent, in the United States. .

I hope, and feel assured, we shall have a report from our exhibit at New Orleans that will be most admirable and that will be a grand compliment to ourselves and these two associations, in common with the milling and grain-growing industries of the State; I trust and believe it will be a credit to us all. And in order that we may continue to advance and may be enabled to maintain our reputation as successful associations in the future, I trust we shall receive the assistance of the State which shall guarantee much more of success than anything which has heretofore been accomplished.

Gentlemen of the associations here represented, I have great pleasure in welcoming you to St. Paul.

President Smith announced that the secretary, Oliver Gibbs, Jr., was absent at New Orleans, and he would appoint S. D. Hillman, of Minneapolis, to act as secretary *pro tem.*, who had been engaged to report the proceedings of this session. It would be necessary to have an assistant secretary.

On motion of J. S. Harris, Cyrus L. Smith, of Minneapolis, was chosen assistant secretary.

Mr. J. S. Harris was called upon to respond to the address of Capt. Blakeley, and then came forward and said :

MR. PRESIDENT: In reply to the remarks of Capt. Blakeley I have only a word to say. When we received an invitation last winter, at our annual session, to hold our next annual meeting in St. Paul, we were rather glad, and to receive a welcome to the city of St. Paul makes us feel still better. We desired to meet you, the people of St. Paul and the people who represent our great State in the legislature at our meetings, in order that they might witness the course of action which we might take, the work which we are doing, in order that if they approved of it, and appreciated what we were doing, they might lend some State aid for the purpose of developing and enlarging our work.

The mission of the Horticultural Society, as you all know, is more than to develop fruit growing in the State of Minnesota. We say horticulture; what is horticulture? Horticulture is gardening—gardening of every kind; it is the planting of the forests upon our broad prairies; it is the planting of shade trees that adorn the streets of our cities; the planting of trees along the roadside, the planting of orchards and vineyards, the growing and harvesting of fruits, and more than that, it is attending the little and tender flower which shall make fragrant the poor man's cottage or adorn the costliest and most gorgeous green-house filled with its exotics, making the homes of the people of Minnesota happy and beautiful.

We have, during the eighteen years that the association has been in existence, accomplished something, and we feel encouraged at the work we have done thus far. We have aimed to lead people to inquire what they needed to do in order that they might raise orchards and gardens, fruits and flowers. Our society was organized in the city of Rochester, on the fourth of October, 1866, and it was a hard task to organize it. We called a meeting, at which there were some fifteen or twenty persons present, attending the State fair, and we started an association called the Minnesota Fruit Growers' Association. We organized and made efforts to encourage those present, as well as others, to do something to promote the planting of orchards and the growing of fruit. I remember that at the close of the meeting we prevailed upon twelve men to become members of the association. The next year we had another meeting, and it was by means of the

hardest work that we kept up our organization. We found that one or two had deserted us, but others took their place. From that time down to the present we have made a gradual advancement, and we have grown in numbers and influence. In the year 1873 we had become so strong and powerful an organization that at our annual session the members of the legislature came over in a body to see us, desired reports of our transactions, and provided for their publication and distribution by the State. From that time to the present our growth has been more rapid than ever.

We have met with many discouragements. Some of our winters have been so severe as to almost devastate our orchards entirely of trees, many varieties being killed entirely; and this has had a tendency to discourage all but the stout-hearted—all but those who were so enthusiastic as to be able to rise above the ruins of former efforts and again push bravely on. At the present time I think we number about three hundred members.

Three or four years since the legislature were satisfied we were doing a grand work, and the citizens of St. Paul and Minneapolis, welcoming us to their homes during our meetings and lending us every manner of encouragement, the legislature extended us a special favor and gave us an appropriation of \$1,000 annually, to help us carry on these meetings and make experiments in our work.

Gentlemen, we came to St. Paul for the purpose I have named, and again, we came for another purpose. St. Paul is the capital of our State; whatever we can do that will encourage the people of this beautiful and wealthy city, to beautify their homes, to make their surroundings more pleasant, we will do, and try to persuade you to make them so pleasant that those who come from the various parts of the State will see something which will be to them an object lesson, and which will please and accomplish good. We come to encourage you in doing that, and feel thankful that you have given us a cordial welcome to the city; we understand you welcome us to your homes and that we may behold all that is of interest about this beautiful city. And again I say we thank you, citizens of St. Paul, for the welcome extended to us to-day, and we hope we shall be able to do you, one and all, good, and that our conduct while among you may be such that you will be glad to invite us to come again.

Capt. Blakeley. I would say to those interested in the Amber Cane Association that Prof. Porter is expected to be here on the

noon train, and that I am not yet advised of the order of exercises that will be followed during the session, but this afternoon we shall be able to learn something more definite as to what has been done in this regard. Members of that association have no doubt received his circular. I would state here that Mr. Ingersoll and Mr. Fairchild, from the committee appointed with reference to fair grounds, would be glad to meet any present during the time they remain in the city, or at any other time, and consult with them in regard to that matter. They would be glad to arrange for a time when they could meet with us and explain what they are attempting to do. I hope we may reach a thorough understanding as to what is for the best with regard to our future home for these societies.

Mr. D. W. Ingersoll. I am very glad Capt. Blakeley has mentioned the subject, and we will be very glad to meet with you at any time and explain the matter.

President Smith. We are willing to dispense with the order of exercises of the Horticultural Society and allow you any time you may wish to devote to that subject.

Mr. Ingersoll. I think we had better not have the time announced at present, but we will arrange in regard to it.

The balance of the forenoon was devoted to the arrangement of exhibits and informal work, and a recess was taken till 2 o'clock P. M.

The room fitted up specially for the use of the society is No. 16, located on the third floor of the capitol building. The exhibition of fruits, of samples of amber-cane sugar and syrup, though not large, was attractive and contained many excellent specimens, especially of Minnesota apples, rendering the exhibit specially attractive and indicating very plainly that fruit growing may be carried on with success and profit in the Northwest.

Following is a partial list of the exhibits: J. H. Ackerman, Young America, Eumelan grapes; C. L. Smith, Minneapolis, White Star potatoes; Northrup, Braslau & Co., Minneapolis, large collection of field, garden and tree seeds; J. S. Harris, La Crescent, winter seedling apples for Lewis Lilley, La Crescent; James Wright, Minnesota City, seedling apples; Truman M. Smith, St. Paul, Isabella, Maxatawney, Catawba, Diana, Oporto and other varieties of the grape; Lewis Seutler, Carver, seedling grapes; A. W. Latham, Excelsior, M. Pierce, Minneapolis, and Peter M. Gideon, Excelsior, Wealthy apples; Knight Whipple, Northome, eight varieties of beans, two varieties of sweet corn,

three varieties of potatoes; J. J. Cale, three varieties of onions; H. F. Busse, Minneapolis, Beauty of Hebron potatoes, Hubbard squash, Red Weatherfield onions, White Globe and Yellow Danvers; Andrew Peterson, Waconia, Wealthy and Minnesota crab apples, Winstead Seedling, Seedling No. 4, plates of Russians, Lieby, Ostrakoffs Glass, Hiberna, Switzer, Imperial; Dr. C. W. Crary, Lake City, Perry Russet; J. M. Underwood, Scott's Winter, Wealthy, Malinda, Longfield, etc; A. W. Sias, Rochester, for F. K. Phoenix, Delavan, Wis., three varieties seedlings, Centennial Russet, Hollister Sweet and Forest No. 1; for J. W. Hart, Hart's Seedling, with specimens of leaf, scion and wood; also Fameuse, Waldron's, Waldron's Sweet, Gen. Grant, Unnamed Seedling, Rollins Russet, Rollins Pippin, Wabasha, Elgin Beauty, Russians, Leipsic Barsdorf, Red Blush and Charlamoff, Hyslop; for A. J. Phillips, sweet seedling, sour seedling, Talman Sweet, Pewaukee, Walbridge, Golden Russet, and Willow Twig.

Following is the seed exhibit of Northrup, Braslan & Co., Minneapolis :

Beans—Dwarf Blackway, Dwarf Golden, Crystal, Ivory Pod, Improved Red Valentine, Long Yellow Six Weeks, China Red Eye, Dutch Case Knife Pole, Horticultural Pole, Large Lima.

Beets—Dark Red Egyptian, Dewing's Early Blood Turnip.

Cabbage—Premium Flat Dutch.

Cucumbers—Green Prolific, Improved White Spine.

Grass Seeds—Red Top, Timothy, Red Clover, Kentucky Blue Grass, Orchard Grass.

Lettuce—White Seeded Tennis Ball, Black Seeded Tennis Ball.

Water Melon—Mountain Sweet, Mountain Sprout, White Icing.

Musk Melon—Nutmeg.

Onions—Extra Early Red, White Portugal.

Peas—Northrup, Braslan & Co.'s First and Best, Yorkshire Hero, Little Gem, Premium Gem, Carter's Telephone, Prince of Wales, Black Eye Marrowfat.

Parsnip—Hollow Crown.

Pumpkin—Connecticut Field.

Tree Seed—Box Alder.

Turnip—Sweet German.

Tomato—Acme.

Squash—White Bush Scallop.

Wheat—Saskatchewan Fife.

AFTERNOON SESSION.

TUESDAY, Jan. 20, 1885.

The meeting was called to order at 2 o'clock P. M., pursuant to adjournment, by Capt. Blakeley, who stated that Prof. Porter had arrived from New Orleans, and it would be well, perhaps, to arrange as to the time to be given to the Amber Cane Association at the present session. There should be an understanding as to the time to be occupied; there was sufficient time for both societies, but there should be regular hours of work assigned to each. He simply desired to bring the matter up to ascertain what time the members of the Amber Cane Association desired to occupy. Prof. Porter was present and would make a statement.

Prof. E. D. Porter. When Secretary Gibbs approached me at New Orleans with reference to the best method of procedure of these societies, we did not know whether, considering the absence of so many of our members from the State, at the Exposition or elsewhere, that it would be worth while to undertake the holding of anything like a formal meeting on our part. He stated to me that circulars had been sent to all the members of the executive committee, and after waiting two or three weeks answers had been received from a majority of that committee endorsing a joint meeting, and also the idea of making these meetings informal. Of course the Amber Cane Association has made nothing like formal arrangements under the circumstances, and all we propose to do is to unite with the Horticultural Society in the discussion of matters of interest in common to both, asking for only a portion of the time, of course, for the transaction of the official business of the association, such as the reception of reports and election of officers for the ensuing year. I should think, perhaps, the forenoon of a day would be sufficient; but further arrangements might be deferred till after the morning session to-morrow, when more of our members will be here.

President Smith. I presume members of the Horticultural Society are ready to give way at any time you may desire. I hardly think there was a member who received a circular, in

regard to the matter, and no program was made out as I am informed. I asked Mr. Gibbs, when he spoke to me about it before he left for New Orleans, if he had consulted the executive committee, and he said he hadn't time, and if we wanted to consult them, we must do it ourselves, he didn't think there was any necessity of it.

Mr. J. S. Harris. I would say that I, for one, was opposed to the Horticultural Society and the Amber Cane Association meeting in joint convention without a program of exercises, not knowing what time was to be given to each, and without knowing anything about what was to be done. I did not believe anybody would want to come.

Mr. C. L. Smith. I asked Mr. Gibbs what was the arrangement, and he told me it was all arranged, and the program would be printed and sent out in a short time. I told him I thought the executive committee ought to be called together to make some arrangement. He said it would take too long, and he hadn't time to get the committee together, and if anyone had any suggestions to make in regard to the program, it could be altered. I waited three weeks and wrote him at New Orleans, to which I received no answer. I wrote him that no arrangements had been made for the winter meeting, and it was very important that something should be done.

Prof. Porter. I recollect a remark being made that Mr. Harris was opposed to it, but don't know that I recollect any other names. The statement was made that a majority, as he had been told, were in favor of a joint meeting.

Capt. Blakeley. I would like to inquire about how much time the Horticultural Society will want?

President Smith. We were to have a paper from Mrs. Underwood to-morrow morning, but there is nothing but what we can waive. We want the meeting harmonious, and if members will give us their views, we can, no doubt, arrange as to time desired.

Capt. Blakeley. Will we take 2 o'clock?

Prof. Porter. I suppose we could take the afternoon for business or any other matter that might come before the meeting.

Capt. Blakeley. Will it be desirable to have an address from the president of the association?

Col. J. H. Stevens. It seems to me that this is a matter which is fraught with much moment to the interests and industries of Minnesota. While we want to develop the interests of Horti-

culture, we want also to develop the interests of the amber cane industry. It has been seen proper to have the two societies meet in joint session; now, while I have not been consulted to any great extent in this matter, I certainly was consulted in the beginning, but I gave no opinion in relation to it. We are here and it seems to me that we can have both meetings held in such a way as to prove of interest to all, and in such a manner as to promote the interests of the State. I am sorry to see so few members of the Amber Cane Association here; I would like to see them come in and share the meeting with us.

Prof. Porter. Mr. Kenney is not here and others are absent at New Orleans. The world is very wide, and I hope we shall act in harmony and unite in our efforts to advance the industries in which we are so much interested.

Mr. Smith. We did not intend in getting out this program to consult the Amber Cane Association at all; it was understood when the program was arranged that it was to be varied or altered to suit the convenience of the members present and that we would be ready to divide the time with the Amber Cane Association and give way to them at any time except Thursday afternoon, but that we should hold to that part of the program. I simply mention the fact that there was no program made out, and I insisted on a meeting of the executive committee, and when they met they put out this program; they did so with the understanding that the Amber Cane Association should share in the exercises in such a way as might be agreed on here, and we are perfectly willing to give way to them and divide the time.

President Smith. I was afraid we would be unprepared and find ourselves in the same condition we were last year when there was an effort to divide the exercises with the Forestry Association, and the result was, neither one was prepared and we had to fill out the time as best we could.

Capt. Blakeley. I will say to the convention that I was aware of the condition of things. President Smith called upon me in regard to it and we discussed the matter of joint occupancy of time. It is for want of co-operation on the part of the two executive committees that the order of exercises has not been arranged. I have no doubt to-morrow afternoon will answer our purpose; and, at any rate, it will not take us very long to go through the regular order of our duties, and we shall probably not want to occupy more than the afternoon. If we find we are likely to entrench on our neighbors we may take a part of the

afternoon of Thursday, but I don't know as it will be necessary. With the understanding that we will occupy the time to-morrow afternoon we will, as far as the Amber Cane Association is concerned, dispense with further ceremony.

President Smith. It was the understanding when we made up the program that we were to share the time with the Amber Cane Association, and a motion to that effect will not be necessary.

Capt. Blakeley. I think there is no dissatisfaction anywhere.

Mr. Harris. I wish to make my statement a little plainer. I wrote to Mr. Gibbs and stated that I had very serious objections to having the two societies meet together, and calling the people to meet with us here at St. Paul without knowing what we were expected to do when we got here.

President Smith. We shall be glad to receive essays, and to learn all we can from the Amber Cane members, and get all the information that we can in regard to it. The first business at 2 o'clock, P. M., is the appointment of committees; there should be a Committee on Finance and one on exhibits.

I will appoint, as a Committee on Finance, Wyman Elliot, Minneapolis; J. M. Underwood, Lake City; E. H. S. Dartt, Owatonna.

I would like to have parties entirely disinterested to award premiums, and who will take into consideration our means and the value of the exhibits. Our society funds are not very plentiful, but we want all to share alike and in proportion.

Mr. Dartt. As it has been suggested by the chair that our funds are light, I would suggest that inasmuch as there have been no premiums promulgated that would be paid, those who have brought fruit have no doubt done so at their own suggestion, and not on the part of the society, to pay premiums.

President Smith. It is announced in our programs that liberal premiums will be awarded on all articles deemed worthy of merit.

Mr. Dartt. I didn't get the program, but I got the circular letter from the secretary, and understood that this was to be an informal meeting.

President Smith. It is better to economize in some other way, and where people have come from a distance and brought exhibits, they should receive premiums where they are deserving of it.

Mr. Dartt. I was going to remark that it should not be a

great disappointment if the premiums were rather light on coming together under such circumstances.

The president announced, as a Committee on Exhibitions, Wyman Elliot, Minneapolis; Isaac Gilpatrick, Minneapolis; E. C. Shannon, Granite Falls.

Committee on Final Resolutions: Col. J. H. Stevens, Prof. E. D. Porter, of Minneapolis, and J. S. Harris, of La Crescent.

President Smith. It has been suggested that a committee on legislation should be appointed; it remains with the society to say whether such a committee will be named or not.

Mr. Harris. Mr. President, it is my impression that we should always have such a committee; perhaps it should be a standing committee, with one to be elected annually. I think it should be elected.

President Smith. Why do you think we should have the committee elected with our officers?

Mr. Harris. We are likely to have something come before each session for such a committee to look after—we are liable to have before this meeting is through.

President Smith. This matter can be deferred until Thursday, when officers are elected, and if it is deemed best to have such committee, time will be given to select a good and competent one.

Capt. Blakeley. Mr. President, I would suggest that there be a by-law made providing for a legislative committee, if in order.

President Smith. The next order of business should be a partial report of standing fruit committees. Are there any reports to be made?

REPORTS OF FRUIT COMMITTEES.

J. S. Harris, of La Crescent, then made the following report:

OBSERVATIONS IN SOUTHERN MINNESOTA FOR 1884.

LA CRESCENT, MINN., Jan. 1, 1885.

To the President and Members of the State Horticultural Society:

Taken as a whole, the fruit crop of 1884 in this section was more satisfactory and better than in the two preceding years. The prospect at the opening of spring did not look as flattering as the spring of 1883, especially with apples and grapes. That

year was noted for the most profuse bloom we had ever seen; but between the effects of extreme cold from the previous winter, the killing frosts of May and a cold and backward summer, grapes failed to ripen, and the apples nearly all dropped from the trees before half grown. In 1884 the bloom was much less, but no killing frosts occurred after the fruit had set, and the season was more propitious.

STRAWBERRIES.

Taking the fruits in their order of ripening, we find that the strawberry crop was generally good, and the size and quality of the fruit the very best. They were about a week later in commencing to ripen than in some other years, and, as is usually the case under such circumstances, the season did not hold out as long as when they commence ripening earlier. Wherever beds of pure Wilson were found they gave a magnificent crop. Next to the Wilson, the Crescent Seedling is the most popular variety in cultivation here. The Charles Downing is not doing as well as when first introduced. It has become less fruitful, and the leaves are subject to a rust or blight. The Sharpless behaved better than usual, but is not hardy enough to become a favorite with the growers. Many other varieties are grown in limited quantities, but have not been under test long enough to make it safe to hazard an opinion of them. Observation leads me to remark that most of the strawberry plantations are managed on the run-at-will, go-as-you-please plan, and, as a general rule, are left without renewal until they are overrun with grass and weeds. Another objectionable practice that I have noticed is, making new plantations with plants taken from old, worn out beds. There are several serious objections to this practice. First, owing to tramping of ground and absence of cultivation, the plants are feeble and poorly rooted; second, they are liable to have become mixed with seedling and wild varieties; third, they are often infested with insects and their eggs, that will be transferred to the new bed with them. It would be good policy for every commercial strawberry grower to use for setting only plants taken from beds of the previous year's planting, or to annually make small plantations of the varieties desired, and cultivate them expressly for plants, or else purchase them from some one who makes the growing of plants a specialty. In the case of farmers, it is about equal to going without berries to set the surplus or thinnings of a neighbor's patch.

RASPBERRIES.

The interest in the growing of this valuable fruit has declined considerably in the last three or four years. Old plantations have run out and but few new ones are being made, and the markets are largely supplied from the hedge-rows and by importations. Wherever cared for, the Doolittle Black Cap was fine and productive. The Turner is most extensively cultivated of the red, and produced a bountiful crop of rather small berries. The Cuthbert is promising well, and, should it prove hardy enough, will supersede other varieties. The fruit is of large size, carries well, and is inferior only to the Turner in flavor.

Blackberries gave promise of a fine crop up to the middle of July, when, except where winter protection had been given, and upon northern slopes where the snow laid deep, the heft of the crop blighted and dried up—the probable cause, loss of vitality in the fruiting canes from the severe cold of last winter. It is evident that to be sure of a good crop every year some protection must be given our most hardy varieties.

GRAPES.

Grapes in this district and in most parts of the State were an extraordinary crop, except in a few instances where they were affected with mildew or rot. There were no killing frosts in May to cut back the young growth, and no heavy storms of rain while they were in blossom, to destroy the pollen and prevent the setting of fruit, and the frosts held off so late in the fall that the entire crop matured. The yield was good, the berries and clusters large, and the quality superior.

The leading variety in cultivation has been the Concord; next to that stands the Delaware. The Worden, upon my place, was better than any other variety, and three or four days earlier than the Concord. The Janesville is valuable as an early grape, and very good if allowed to hang until thoroughly ripe. There is some cause for alarm on account of the appearance of the rot to which I have alluded. Its appearance was first noted last fall, and as we have heretofore been exempt from it I have never given the subject any attention, and do not understand the cause of the malady or any remedy for it. My attention was first called to it by a paragraph in a La Crosse paper stating that the Concord grapes in the vineyard of N. Hintgen had been stung

by some unknown insect which had caused the loss of several hundred pounds. I immediately made the vineyard a visit and found the grapes badly affected with what I concluded to be the American grape rot, a fungus disease that has been very destructive in the vineyards of New Jersey and other parts of the East.

The berry at the time was nearly or quite full grown, and the disease appeared in various stages of development and in places the ground was literally covered with berries that had fallen from the stems. I discovered that when first affected they showed only a small whitish speck upon one side, smaller than the head of a pin. This white speck is soon surrounded with a brownish areolea shading off in concentric rings which extend their surface until one-half of the berry is implicated. At this stage the whole structure of the berry is disorganized, the rings disappear and the color changes from a reddish brown to a brownish black, and it ultimately drops from the cluster, or if it remains becomes a little, dried up, rotten grape. In no case do the affected berries recover and ripen. Later I learned that several vineyards in this State were alike affected but in a less degree. Should another season show a return or increase of the malady, an important field will be opened for scientific investigation and experiment.

'APPLES.

The apple crop was generally fair and in some sections large. The exhibits made at the State and other fairs, surpassed all previous years. The injury by the codling moth was not as great as usual; but a more to be dreaded, because more difficult to head off pest, has made its appearance. I refer to the apple gouger, or curculio. The past season, by its work, hundreds of bushels of Duchess apples were rendered worthless and other varieties were more or less injured, probably the Willow Twig the worst. Borers, tent caterpillars, canker worms, scab blight and mildew are already ravaging the older orchards of the State, and tell us in the plainest of language that "eternal vigilance" is to be the price of fruit.

Gentlemen, the situation is alarming, but not past help. The time has come when we need the co-operation and help of a host of close observing, energetic men; men who have soul enough in them to work for the good of mankind and the glory of our great State instead of notoriety and the "almighty dollar."

The time has arrived when our honorable legislature should provide for the employing of a State Entomologist and Microscopist, and the conducting of horticultural experimental stations, or increase the appropriation to this society to enable it to prosecute the work.

JOHN S. HARRIS.

DISCUSSION.

Mr. Harris. I want to show the society the work of that insect or little animal referred to in the paper. This is a Willow Twig apple and it is a fair specimen of the work that these fellows have done. Those conversant with the Willow Twig know that it is a pretty large apple, but this one is a rather gnarly specimen. Here is a Walbridge. I was going to state that in our vicinity hardly one barrel in ten of the Duchess was fit to go to market. I know some of our old orchardists, whose names I need not mention, have had to dry their fruit. The insect stings the fruit and does the mischief in that way. About one-fourth of our fruit crop was in that condition last season. I have been trying to find a man who could give us a paper and tell us of a remedy; I have not yet found him but hope I may. The insect seems to do the mischief about the time strawberries are ripe, and not at the time the apples are in blossom. One of our members caught them at it at the time we had our June meeting last year.

Capt. Blakeley. I have been very much interested in the report of your committee, especially with regard to the report of the rotting of the grape, noticed at the vineyard near La Crosse. I think it is about the first occasion I now call to mind that has been reported in this vicinity or in this State. I would like to ask if he is quite positive it is the rot or something similar to it, whether there was any inspection by other persons also who were competent to offer an opinion in respect to it. I should hate very much to have a report go out from this association that rot was in our grape fruit in this vicinity. I should like to know whether it might not be possible that it was something else. Of course I am not competent to inspect fruit, but I know that there are others here who are and who are probably able to give us some opinion, contradictory, perhaps; others who have had experience in grape culture.

Mr. Harris. I should hope that somebody could contradict this and show it is not a rot, for I should hate very much to have

that go out if it is not the fact. I would say that the grape looked very much as I saw it the previous season in Ohio, on the Catawba, and they told me that was the grape rot. It comes on at first in little spots about the size of a pin head, and after that rings form which show very distinctly for a day or two and after that it looks very much like a sunburnt fruit, and the grape soon drops off. A Mr. Hartman, of Houston County, told me that they lost at least one-third of theirs, and I understood that they had the same thing at Brownsville.

Mr. Underwood. I would like to ask whether it is likely to attack one variety more than another?

Mr. Harris. I think it is likely to attack the Catawba first and the Concord next.

Mr. Underwood. I am not quite certain as to what it is; but it has affected the Janesville, and that is the first I ever saw of it. I spent considerable time in looking at works on grape culture to see if I could find something that would exactly describe it, so that I could get a correct diagnosis of the trouble in hand, but did not find anything that would satisfy me exactly as to what was the matter; but it was very closely allied to what you have described, that is, commencing with a little spot and working in a circle. I don't think in the first place on our grapes it was larger than half a ten-cent piece. That was perhaps in the most aggravated cases. Only that one variety was attacked with us this year.

Mr. Harris. I was not on any plantations where they were growing the Janesville.

Mr. P. M. Gideon. Two or three of ours were entirely swept out by it, but the Janesville came out the best of all.

Mr. M. Pearce. Did that resemble the sunburn, or was it rot?

Mr. Harris. It resembles a sunburn.

Mr. Pearce. I don't know, I had it on Rodgers' No. 4; there were a few grapes affected on a bunch and the rest would be free from it. I looked at it a good deal and studied the matter over, and concluded it was a sunburn, and then concluded it was not. I noticed it was on Rodgers' No. 4, but it was not very bad. I found the other grapes were not affected. It didn't seem to be a contagion. It seems to me to be something like what I would call a sunburn. It was something new to me and I didn't know that anyone else had it, and didn't know that that variety was a subject to something of that kind; but it was seldom that a whole bunch was affected.

Mr. C. E. Shannon. Two years ago my grapes were affected; the past year I saw but very little symptoms of it. It seems to me it must be owing to the difference in the climate this year. I had a few on the Elvira and a white grape, and some of the Janesville, that showed signs of it, but my grapes were much better than for the previous season.

Mr. Harris. If it was the rot it would be worse some seasons than others.

Mr. Pearce. I don't think it was the rot. From what I saw I do not believe it is that.

Mr. Harris. The grapes dry up and turn black, and are worthless.

Mr. Pearce. They would not ripen; they hardened up.

Mr. Underwood. That hardening up is something that they have on the Rodgers every year, but it is entirely different from the rot; this rot is another thing. We never saw this on our vines until this past season. It destroyed three-fourths of our grapes. I didn't know of it until the most of the injury was done; it was done before I discovered it.

Mr. Latham. I know nothing of the rot. I had a little of this trouble with the Ionia and the Brighton, but not as it has been described. I can understand how Mr. Pearce should be led to think he had the rot in his grapes, but I think it was the sunburn, because where the fruit is grown in the shade, and by some accident the shade is withdrawn, the fruit will put on this appearance; and it ruins the fruit. I have occasionally had a bunch injured in that way by being sunburnt, but have never seen any rot.

Mr. A. W. Sias. We have a variety we call the Hardy Connecticut; they are a good bearer, but about every other year they are completely ruined by this same thing, whatever it is. We have had the grape destroyed in some places where it was completely in the shade. I don't think it could be from the effects of the sun. Some years the fruit is good, and then, perhaps, the next year they would be ruined entirely. This is the only variety we have that is affected very much in this manner.

Mr. Smith. I would like to know of Mr. Shannon, who lives at Granite Falls, on what kind of ground his grapes grew that were affected.

Mr. Shannon. I noticed where the grapes were the most affected the vines were on ground that was extremely dry. It was protected from wind, so that sometimes it got pretty hot, and it may have been, as a gentleman over there suggests, sun-scald.

Mr. Latham. I think not, unless it was where they were exposed after the fruit was pretty well along. I suppose it is understood that heat scalds and ruins the berry.

Mr. Shannon. On the other ground there was no signs of it.

Mr. Wyman Elliot. I would like to inquire of Mr. Harris whether he detected any signs of mildew on those vines?

Mr. Harris. I saw mildew in Mr. Hintgen's vineyard; it don't affect any other varieties except the Concord; I have also seen mildew on Mr. Sias' vines.

Mr. Underwood. Mr. President, it seems to me it is mere matter of speculation to us here now as to what it is, and I want to say that in observing our fruit that was affected, my experience was that it was more like the sting of an insect or something that had affected the grape at that point and perhaps destroyed the circulation, and which worked in such a way seemingly as if something had poisoned it and killed it; the rest of the crop around it would seem to be all right and in good condition and I look at it that if we could just cut that little scald off and heal it over it would be all right again. Of course I am not offering this as any correct solution of the problem and wouldn't have mentioned it only that I didn't see that anyone else was giving any positive explanation in regard to it. It is barely possible that it is the effect of an insect.

President Smith. I am inclined to think it is the effect of an insect.

Capt. Blakeley. I would like to know of our president whether he has seen this in his experience?

President Smith. I have lost very few grapes in that way, but from what I have seen of it am inclined to think it is the work of an insect and not rot. It is something similar in appearance but I feel almost sure it is from the effects of an insect.

Mr. Harris. Well, I examined a number of grapes by means of the best microscope I could get and I could not discover anything of an insect there. It seemed to be something that had grown and corroded. Mr. Hintgen said no one could convince him that it was anything else but the rot. I brought this matter in as a sort of suggestion to our grape growers; it may be necessary for us to take stringent measures to arrest its progress.

Prof. Porter. I would suggest that each member resolve to carefully observe and to faithfully record and report the facts at our next meeting. I don't think that we are prepared to draw any conclusion in regard to it now.

Capt. Blakeley. I was very much pleased with the paper read, but I should deprecate very much a report from this association that should go abroad to the effect that we had the rot in our grapes. While I don't intend to make any motion in regard to that part of the report of Mr. Harris, I simply make the suggestion whether or no he would not himself, from the expression of opinion and sentiment of those present who have spoken, perhaps amend his report that he had found grapes destroyed either by some insect or by some unknown cause, describing the appearance and character of it; I should hate to have our reports say that we had the "rot" in our grapes.

*Mr. Smith. I have seen something of this and have watched the discussion with interest, as I have known something of the circumstances attending it, and I am of the opinion that where the vines were perfectly healthy the grapes were not affected. That is my conclusion. I think that Mr. Shannon's idea is about right, that where it was driest there they were hurt the worst. Mr. Latham didn't have any of it and he is located near the lake and close to the water. At the foot of the hill on Mr. Shannon's grounds there was plenty of moisture and there he didn't have any of it. I don't know as to the others, but on the grounds of Mr. Underwood there is plenty of chance for it to get too hot. I think the trouble is due to unhealthiness of the vines rather than to any disease.

Col. Stevens. Mr. President, I am happy to announce that Mr. A. G. Tuttle of Baraboo, Wis., is present, whose name is a household word among horticulturalists. I move that he be invited to a seat with us and to act in the deliberations of this association.

The motion was carried.

President Smith. Mr. Tuttle, will you please come forward. I will say to the members of our society that Mr Tuttle has met with us before and I am very glad to have him meet with us again, and I know we can all profit by his instruction.

Mr. Tuttle. Mr. President, it is a good many years since I met this association; I believe its session was then being held at this place, and I think during the winter of 1872 and 1873. You were then undergoing a change in your horticultural ideas from the effects of that winter or immediately afterwards. I know at that time you were recommending varieties of the apple that we could not indorse down in Wisconsin.

* Where Mr. Smith's name appears without the initials being given, reference is had to Mr. C. L. Smith, and not to President T. M. Smith.

President Smith announced that a change would be made in the program, and that Col. Stevens would now read his paper on the subject of "Ginseng."

CULTIVATION OF GINSENG.

BY COL. J. H. STEVENS.

MR. PRESIDENT: In common with all of the members of the society, I am much interested in all matters that appertain to the horticultural interests of the state. That the efforts of the society have been fraught with great moment for the weal of all classes of our citizens cannot for a moment be doubted. There is one product incident to a portion of our soil and climate that has never, as far as I know, received any consideration from our deliberations. I refer to the cultivation of ginseng. I do not hesitate to say, for one, that however insignificant this little plant may appear in the minds of our members, that I can never forget the dark days that immediately followed the financial troubles of 1857, when by the gathering of the roots in the big woods, of this native product, the families of hundreds of farmers in our state were saved from actual want of bread. It was a god-send to them, and a rich harvest to the merchants and traders of that period. In short it was about the only article of export we had, that would bring the hard cash. The woods were full of it. One house in the adjoining city of Minneapolis, that of Mr. Godfrey Schielting, paid to the small retail dealers in the country some \$50,000 per annum for two or three years for this article. Other houses in St. Paul, Shakopee, Mankato, St. Peter, Faribault, and other places of trade, probably paid out more money each year for this product than the Minneapolis house did. Being intimately connected with the farmers then, I know of the great value it was to them; hence my partiality and kind remembrance of the service it was to the people at that time.

After our annual meeting last winter I saw, for the first time in many years, an almost life-long friend, Isaac Marks, of Mankato. I knew him when we were boys in the lower county, and many of you will remember him as an honest merchant years ago on the banks of the Upper Mississippi. I was much surprised when Mr. Marks informed me that his purchases of ginseng, the present product of Minnesota, amounted annually to considerable sums. It would appear by this fact, so to speak,

that it reproduces itself, because it was claimed that it was all gathered during the years of the hard times.

In June of the past year the department of State at Washington addressed inquiries to the ministers and consuls of the countries where ginseng is used, to ascertain its general market value and the principal use made of it, and other facts bearing upon the article:

1st. As to the supply and demand.

2d. The difference between the cultivated and wild roots—as to market value and demand.

3d. How the demand for the wild American roots compares with the wild native roots.

The answers were very voluminous, and from them we learn that in China there are various kinds used, viz., the Corean, Japanese, American and native. The native is said to be imperial property, and is sold to faithful subjects, who are willing to pay almost its weight in gold for a remedy believed to have great virtue.

It seems hard to determine the specific use of ginseng in China.

Ginseng is divided into two classes, clarified and crude. The former is rendered translucent by steaming, skinning and drying the fresh roots; the latter is the natural dried root. The roots are about the size and length of a man's little finger, and when chewed have a mucilaginous sweetness. If good they will snap when broken. Dr. Smith, in his work on Chinese materia medica, says:

"The trade in this drug is a specialty. Great care is required to preserve choice specimens from the effects of damp and the attacks of worms, to which it is liable. This drug is prepared as an extract, as a decoction, in silver vessels as a rule. Its effects are apparently those of an alterative tonic stimulant, carminative and demulcent character, with a few exceptions, but with many reservations as to the stage of the disease in which it may be administered with the greatest benefit and safety."

In 1882 there was imported into China from foreign countries 4,731.27 piculs (133½ pounds to the picul). In 1883, 3,499.38 piculs. American ginseng sells in China at from \$2 to \$5 per catty (1½ pounds).

American ginseng is principally, if not entirely, shipped to Hong Kong. The import of crude and clarified root from 1860 to 1883 inclusive amounted to about 10,021,000 pounds, or the average of about 417,500 pounds per annum. Half of this comes

direct to native importers and others through agents in New York and San Francisco, and the other half to an American firm from Western America. The root is sorted previous to shipment to China, and comprises various grades, differing from each other in value from \$50 to \$100 per picul. The average price for crude (which forms the bulk of shipments), according to the following classifications, are: Superior, large selected root, \$450; large and selected, \$380; good ordinary, \$300; medium good, \$270; fair, \$250.

Some very choice large roots have brought \$600 to \$700, and "extra choicest selected large and heavy" sometimes commands fancy prices, up to \$1,000 per picul.

Few persons appear to know about it more than that the root is largely used in the empire as a stomachic or tonic, but, singularly enough, its value seems largely to depend, in the minds of the people, more upon the radix than upon its inherent qualities.

The name "ginseng," I am told by Chinese scholars, signifies the "Man Plant," on account of the shape of the root, which is bifurcated, somewhat resembling the thighs and legs of a man. The nearer the peculiar form approaches to perfection of resemblance to the human frame, the greater the value. I am reliably informed of one single root, weighing not over three pounds (two catties) that was sold for about \$1,500 in gold. Of course its intrinsic value could not have been greatly different from other roots of the species, but its shape was esteemed to be very perfect.

The use of the root is universal throughout the empire. Nearly every drug store of the natives has displayed upon the door posts the announcement that "ginseng and young deers' horns pills" are an article of ready supply. The latter component is also esteemed valuable as tonic, and two combined are a *sine qua non*. They are first reduced to powder, and then mixed in the required proportions. The ginseng is believed to have special effect in strengthening the genital organs, and this idea alone would give it great value in the opinion of the Chinese, as well as the other nations of the East. The faith in it is universal among them, whatever the fact may be; and the highest mandarins, as well as the coolies, use it.

I gather the above, in relation to its use in China, principally from a reliable Eastern paper.

And now what I wish to call the attention of the society to:

Can ginseng be cultivated? I am well aware that there is a common opinion that it cannot; that it has a spontaneous growth in certain soils in the forests of the continent; but it appears to me to be an erroneous opinion. It is so opposite to the experience in everything else belonging to the vegetable kingdom that I am rather inclined to think that the experiment has never been made. My conclusions are, if it could be successfully cultivated, that the profits in raising it, in favorable localities in Minnesota, as well as in other Western states, would be very great. I ask the society if any of its members have any experience in regard to the habits of this plant? If properly considered, and the necessary experiments made, there might be a possibility we could add an important diversity to our home products. As an article of export there would be no danger but what it would command a high price in the commercial world. Several thousands of dollars' worth could be raised on an acre, provided it could be made to grow as well in a cultivated state as it does in a wild one.

DISCUSSION.

President Smith. You have heard the essay; remarks are now in order.

Col. Stevens. My attention was called to this by some friends of mine living in Carver County, and it was requested that it should be brought before the meeting at this time.

Mr. Smith. Mr. President, in view of the fact, as I suppose, that very few of the members of the horticultural society are very well posted on ginseng, I would move the appointment of a committee of three, whose duty it will be to inquire into this subject, as to the cultivation of it, and make experiments during the ensuing year, and report at our next meeting. I think that is the best we can do in regard to it.

Mr. Whipple. Mr. President, I think there are some members present that have had some experience. I believe there are several here that have lived in the "backwoods," and I for one have lived for thirty years on the products of ginseng to some extent. I came to Northome in the year 1857, and that was about all we had to live on in those days. We dug the "sang" for a living, and we made good wages at it. I have dug more or less nearly every year until within two or three years, and have taken as high as \$6 a day for digging; but at that time the dry

sang brought \$1 a pound. In 1883 dry sang was \$1.80; this year it was from \$1.40 to \$1.60. As far as cultivating it is concerned, I have experimented some on that. I would say that it can be propagated, but not cultivated. You can gather the seed and sow it in its native bed, that is, in the forest among maple timber, and propagate it, but you must have a fence that a deer cannot jump over to keep the sang diggers out of it, or you will not have any proceeds. You can take a full grown root of the sang and set it out in a cultivated bed in the sun, and inside of one month it will have gone to seed—that is, the leaf will be dead and the root and everything will be dried up. You cannot cultivate it in the sun; that is my experience.

Mr. Smith. Does it seed pretty well?

Mr. Whipple. Well, not very well; and at the present time it is hard to find stalks old enough to have seed.

Mr. Smith. Do you know how old it has to be to have seed? Is it a perennial or annual?

Mr. Whipple. It begins to seed when two or three years old, but the most of it is dug out at the present time the first or second year from the seed.

Mr. Peterson, of Waconia. In 1858 I planted a handful of ginseng in a bed, and I have dug a good deal of it in the woods, but if it is not shaded it will not grow. I think myself that it should be cultivated, and that ought to be done in the woods, not where the woods are too thick. May be it could be raised there but not out in the open field.

Capt. Blakeley. I would like to ask Mr. Whipple what character of timber he gathered sang among in the Big Woods and on what kind of soil?

Mr. Whipple. Well, on a clay soil; generally maple and oak is the best.

Mr. Peterson. Where it is maple it is generally the best.

Mr. Charles Kenning, of Bird Island. Mr. President, in 1857 I experimented somewhat. I tried to propagate by root plants and by seed in a garden patch but did not succeed. In the woods I could raise scraggy ginseng, but never could as a native plant in a bed, and I soon quit it altogether. Us boys, at that time, were allowed the proceeds of our digging. We tried to propagate it and failed, and I doubt if we can raise the root at all by field culture.

Mr. Smith. It is possible that we could if we were to try it in the right way. You cannot raise the fir, the pine and the spruce

by seeds in the open ground, and yet thousands of them are raised all over the country. It is possible that if experiments were conducted aright we might have success with ginseng just as we have with spruce and pine. They germinate in the shade but we succeed in growing the trees with cultivation.

Mr. Tuttle. You have to keep the spruce and pine in the shade the first two years.

Col. Stevens. The ginseng seems to reproduce itself after the roots are all dug up.

Mr. Whipple. I know we have dug sang for years on the same grounds. The shoot comes up with one stalk and one bunch of leaves on it. You will often find that where the person has dug and thrown back the dirt you will find there three to half a dozen of those young shoots coming up the next year.

Col. Stevens. Let me say that I am acquainted with a responsible party, who lives in the Big Woods, who told me that if the society could plan some way in which it could be propagated that he could make ten thousand dollars off every acre of land that he had.

Mr. Whipple. I don't doubt it. But I fail to find any way that you can propagate it to pay.

Mr. Smith. Perhaps we had better refer it to our experimental farm, to our friend Prof. Porter.

Mr. Whipple. I don't think he has woods enough there to shade it good.

Mr. Ackerman. How long does it require for the roots to perfect themselves, to attain their growth?

Mr. Whipple. That I cannot answer.

Mr. Gideon. They don't appear to ever stop growing.

Mr. Whipple. You will find that every shoot has a prong or sort of a jog to it, and I have known them to have twelve to fifteen jogs on one stalk. You can tell by that how old the roots are. I don't know how much older they get; you count these and tell the number of years' growth. These shoots will rot off and leave new roots.

Col. Stevens. I will second the motion of Mr. Smith with the understanding that there shall be something found out if there can be.

The motion for the appointment of a committee to report on the subject under consideration at the next meeting, was carried. The president appointed as such committee: C. L. Smith, Col. J. H. Stevens and Prof. E. D. Porter.

Capt. Blakeley. If there is no other business before the society I would like to have Mr. Ingersoll appear before the society. He is chairman of the Committee on Fair Grounds from the St. Paul Chamber of Commerce; he would be glad to know if this society would like to confer with this committee in regard to the matter. If he is present he can come forward and explain what is desired to be done. It would not take very much time, and perhaps to-morrow afternoon could be taken for the purpose.

Mr. Ingersoll. Mr. President and Gentlemen, I don't desire to take up much of your time except to state that our committee would like to meet you and state what has been done and the attitude of St. Paul towards a union fair ground, or fair grounds, that will accommodate the entire State, placing them at a point that may prove most accessible by railroad and other means of access, and the most accessible that can be selected. The committee were appointed at the suggestion of people connected very closely with the State Agricultural Society. St. Paul is in most hearty sympathy with the movement to have fair grounds selected which will be accessible and accommodate the people of the whole State for all future years, and it is for you, gentlemen, to say whether you desire to take any action. We would be very glad to come before you and state what can be done.

President Smith. So far as the Horticultural Society is concerned, and Capt. Blakeley can speak for the Amber Cane Association, we will grant you any time most convenient to you.

Mr. Ingersoll. Say sometime then to-morrow.

Mr. Elliot. Wouldn't it be well to put this off till, say Thursday afternoon.

Capt. Blakeley. It will be at the will of the convention.

Mr. Harris. Probably there will be more here then.

President Smith. Suppose we put it Thursday at ten o'clock.

Mr. Ingersoll. Very well; that will give me ample time to see the committee.

Prof. Porter. Mr. Chairman, I would make a motion covering the suggestion of Mr. Ingersoll, that on Thursday morning at ten o'clock the joint societies, the Horticultural Society and Amber Cane Association, will hear any statement bearing upon the proposed union fair grounds from committees of either St. Paul or Minneapolis; either or both.

The motion was seconded and carried unanimously.

Mr. Harris. Mr. Cutler, of Sumter, is down for a paper on strawberries and small fruits. Before our meeting adjourns we

may get a paper from him. I have received a letter from him and an abstract from it may serve to bring the question before the meeting in case his paper should arrive too late. He states in his letter that he had a fair crop of berries last year, most of them the Crescents; the Sharpless yielded very few berries. He says: "At a meeting of the McLeod County Institute I gave a paper upon the growing of small fruits and in that paper stated that the Sharpless would probably 'peter' out, and they have turned out about as I predicted, for I had very few berries. I have several new kinds; got several new varieties last year. I have fifty vines that produced 5,000 plants; the Phillips is a very nice berry; set fifty plants last spring; set out some of Stone's hardy blackberries last spring and was well pleased with the bushes, but as I did not cover them I am afraid that forty-five degrees below zero has fixed them. Have set about one acre of Turner raspberry, so you see I am not idle." He wishes us an interesting meeting and a profitable time. Mr. Cutler has been up in that country some ten or twelve years. He has been trying to raise strawberries and two or three years ago he thought it a good idea to come down and attend the meeting of the State Horticultural Society. It was after listening to the discussions and hearing the reports that he carried home this information with him that he has been successful in getting some berries from his plants. Previous to that his efforts had proven a total failure, only loss of time and money, but he has succeeded so well that he is now setting out two acres and has quite a piece started. So we see, gentlemen, our society is doing a little good; we are planting some leaven that is working.

Prof. Porter. To-morrow afternoon has been assigned for the meeting of the Amber Cane Association. I will state that after the opening address, which will be delivered by the president, Capt. Blakeley of St. Paul, that I will make a statement of the condition of the industry of Minnesota sugar and syrup at the New Orleans Exposition, and a comparison of the sugar products of Louisiana and Minnesota.

President Smith announced as the next in order a paper entitled:

NOTES FROM A FRUIT GARDEN.

BY W. H. BRIMHALL, OF ST. PAUL.

The paper, by request of Mr. Brimhall, was read by the assistant secretary, Mr. Smith.

Mr. President and Members:

Being a new beginner in small fruit-growing, I can give you nothing of much interest. When I came on my place in the spring of 1882, it was covered with hazel brush and scrub oak. Being anxious to raise strawberry plants for the next year's planting, I broke up a small patch, two by five rods, about the twentieth of May and set it out to Crescent Seedling, Charles Downing and Wilson, setting them two feet apart in the rows and the rows four feet apart. They did not run very much; the plants were small and the crop did not last two weeks; they seemed to dry up or blight.

I set from that bed 1,500 Crescent Seedling, 1,500 Charles Downing and 500 Wilson on land in fine condition, giving all the same care in summer, and covered with marsh hay. All came out nice in the spring, the Crescent having made the largest number of plants. The Charles Downing were a failure, there not being enough fruit to pay for picking, while from the Crescent and Wilson I picked six hundred and fifty quarts of nice berries. I mulched a part of the bed and found that it doubled the yield. The berries were larger and lasted a week after they were all gone from the part not mulched. For mulching I used straw from an old stack bottom. Have tried early and late planting and find that plants set early are less liable to dry out, make a larger growth of vines, and yield more fruit. I set last spring mostly of Crescent and Wilson, setting three rows of Crescent and one of Wilson. I also set some Glendale and Iron Clad. All made a nice growth and looked well when covered. The Iron Clad made the largest growth of all, completely covering the ground with strong, healthy looking plants. Have noticed the leaf-roller the past season. It seems to work on the Crescent mostly. Have not seen any on new beds.

For raspberries I have set Turners mostly. Set as early as the land will work well, in rows north and south, six feet apart, and three feet apart in the row, using the little green shoots just

as they come through the ground, being careful to take up plenty of roots with them. Keep well cultivated the first season and mulch heavy in the fall with old hay or straw. Gooseberries and currants I tend the same way, and all bore well for young bushes. I set Red Dutch currants and American Seedling gooseberry. The gooseberries mildewed badly.

My grapes set on a southern slope two years ago last spring; most all killed out, leaving but twenty out of one hundred and forty. They were cut back and covered with earth in the fall, and covered early, the only live vines being in the hollow at the ends of the rows where the snow blew in. They were Delaware and Concord mostly.

DISCUSSION.

Mr. Shannon. I would like to ask what is the most approved material for covering strawberry vines in the winter?

Mr. Smith. Mr. Brimhall has answered that question, and he says it is marsh hay. Now, I have traveled about a good deal in Minneapolis and St. Paul, and other places, looking at strawberry beds, and I like the plan of Mr. Brimhall in the way he protects his strawberry plants, and think it is about the best of anything that I have seen anywhere, and he uses and recommends the use of marsh hay. I like his plan also of setting the young shoots of the raspberry and cultivating them well the first season, and afterwards mulching the land and putting it up close to the raspberries. I think I would add a trellis which I would put along by the side of the canes and I would put some corn stalks over them for a protection in the winter. Mr. Harris refers to something similar. A very small handful of marsh hay, if tied up around the canes and covering them a little, will protect them perfectly during the winter.

Col. Stevens. Will not tame hay do as well as marsh hay?

Mr. Smith. No, sir, there is too much danger of the seed scattering in the soil, and in this country we can get plenty of slough grass.

Col. Stevens. I would like to inquire about the use of corn stalks; I know it is a good thing, but I have my doubts whether it is quite as good as coarse manure or hay and straw, which I think the best thing that can be used for strawberries. The best crop of strawberries I ever saw grown I think was on Mr. Wyman Elliot's place, and the mulching used was corn stalks.

Mr. Elliot. The objection to corn stalks is they are a little too coarse. Where a covering is used for the plants that are exposed the best thing is coarse marsh hay. It is very fortunate for us that we have plenty of lakes all over this country, and most of us can get an abundance of marsh hay.

Mr. Whipple. Has there anything been found better than marsh hay for raspberries?

Mr. Smith. I think Mr. Whipple has found something better. The two societies have come together at this session and what the Amber Cane Association has left the horticulturalists may take for their mulching. [Laughter.] Mr. Whipple uses the sorghum bagasse among his raspberries, and I noticed that last season he was selling the berries about a month after the rest of his neighbors got through, and they were the best in the market at that.

Mr. Whipple. I have a patch of raspberries that I have fruited for nine years, and during the past seven years I have done scarcely anything to them except to mulch them a little with this bagasse.

President Smith. I won't attempt to say how many quarts of berries I raised on a single acre; but I had a party who picked one hundred and four quarts in a day from the patch, so you may judge they were pretty thick. And they were mulched with saw dust.

Mr. Whipple. A good deal depends on how full one fills their baskets when they are picking.

Mr. Tuttle. Mr. President, I have tried various things for covering strawberries; we used to use marsh hay, but a few years ago I had a plantation of strawberries and I had a heavy crop of corn and so heavy that I did not cut it all up, so after I had taken out the corn I took the stalks to cover my strawberries. I grew that year and had one-third of an acre of the Crescent; I grew one hundred bushels from that third of an acre. I found that mulching—I only mulched once; I spread the stalks out evenly and I let them remain and didn't attempt to take the stalks off. You will find that the plants will crawl up through them. The first that I mulched I took off a part of the stalks; but I was away for a few days and when I came back to take off the balance I found the vines were growing up through the stalks and I left them. The result was the berries were very much better where the stalks were left on the vines, and ever since that I have used corn stalks for mulching. It makes a good protection against the severe freezes, and it keeps your berries back in the spring.

The difficulty with marsh hay is that you are obliged to remove it; it is necessary to remove it in the spring, but it is not necessary to remove corn stalks. I only grow two crops of strawberries. The first year I cultivate the vines thoroughly, and then mulch them well in the fall and that is the last I do to them; I get two crops. The old stalks that were first put on by the second year become partially rotten, and furnish a good mulching for the next year.

Mr. Pearce. Mr. President, I think the subject of mulching strawberries is one of importance to all strawberry growers, but with me it has been a query when it should be done; from my own experience and what I have observed I believe that it is a better time to mulch when the snow is on the ground. I have had the best success, and the best crop of berries I ever raised, mulched a little before Christmas with straw, and after the snow was on the ground; the straw kept the snow from melting, and kept it on the vines for weeks; they certainly were the best vines I ever grew and came out very vigorous. If it was not such an inconvenience to get around on the snow I think I would adopt that plan. The great trouble is you are apt to get the mulching on too thick, so that the vines will smother. I don't know from the experience I have had if we happen to have snow along towards Christmas that I would mulch any other way; I don't think the strawberries are killed in the winter; it is in the spring they are killed. I am speaking of my experience; my success has been in mulching on the snow. Where straw, marsh hay or anything of that kind is used there is likely to be a good deal of grass seed.

Mr. Tuttle. I would say that I picked strawberries last season for the market as late as the twentieth of July where the vines had been covered with corn stalks. Speaking of the quantity picked in a day, I had one hand that picked eighty quarts in a short half day and another hand that picked seventy-two.

Mr. Elliot. I would like to hear from Mr. Isaac Gilpatrick; he is a gentleman who has had some experience as an amateur; perhaps some that grow strawberries on a larger scale may get a point or two from him.

Mr. Gilpatrick. My experience has been somewhat limited, but I mulch with straw and manure and cover the ground with corn stalks also; I prefer the corn stalks. It does not take very much time for mulching and I never had any too much time. I have grown the Wilson and the Crescent, the Eureka and the

James Vick's. I prefer corn stalks to anything that I can find for mulching.

President Smith. I would state that my friend Elliot took me out to see Mr. Gilpatrick's plantation; I think it is certainly the finest plantation of strawberries I have ever seen. He had taken a great deal of pains and they were in fine condition.

Mr. Gilpatrick. I have had hands who picked sixty quarts a day and not less than forty, and I have never used a drop of water. I have a pump so arranged that I could use water at any time and put it all over the bed.

Mr. Elliot. How fast could you pick those berries?

Mr. Gilpatrick. I never tried myself, but I had a girl seventeen years of age who was out and picked without anyone's saying anything to her, and she picked a quart in four minutes. She got on her hands and knees, and they were right where she could get a hold of them.

Mr. Tanner. Mr. President, I would like to know if sowed corn would not make a better covering than corn stalks.

Mr. Smith. The objection would be that the stalks would lie down so close to the plants that it would have a tendency to cause them to ferment and injure the vines; the corn stalks would make it a little more open, and I don't think the sowed corn would be so good for the roots.

Mr. Harris. I think there would be danger in using sowed corn if three feet of snow should fall upon it before the ground was frozen; when you woke up in the spring you might be minus of your strawberries. I like corn stalks for mulching. The best patch of strawberries I ever saw were mulched with hop vines. The man ran out of straw, and he had a hop yard of an acre, and utilized the vines for that purpose. Speaking of picking strawberries, it is pretty good picking a quart every four minutes. My daughter went out last summer and picked one hundred quarts in six hours and ten minutes of the Wilson Albany strawberry, and carried the baskets to the end of the rows and got her baskets back. That was pretty good picking, and the vines were not mulched, either; they were pretty good berries.

President Smith. Isn't it a better way to mulch as Mr. Gilpatrick does? He mulches close up to the vines, especially on the south side. I am inclined to think it is better to mulch close up to the vines than to cover the ground and the plants so much.

Mr. Gilpatrick. I have never lost a plant where it was mulched close up on the south side.

Mr. Harris. I have seen a good many of the Wilson spoiled by covering them with marsh hay; I had rather do without any mulching than to cover them too much.

Mr. Gideon. I have mulched with straw and marsh hay and with leaves, and I have grown them without any mulching whatever. I have lost plants when mulched with straw, with hay, and with leaves, but I never lost any plants yet when they were not mulched. The best crops I ever grew I grew without any mulching.

Col. Stevens. You are in a peculiar situation; you are in the Big Woods and not on the prairie.

Mr. Gideon. No; it is not on the prairie.

Mr. Elliot. I think there is a difference there; difference of location should be considered. I think if Mr. Gideon lived on the prairie he wouldn't do that way. I think there is one point that we should recognize always in covering strawberries, not to cover early, but cover them when the ground is frozen so that it will bear a wagon, and then not enough so as to put them all out of sight; cover five or six inches, but not enough to cover the foliage out of sight. I think you won't have any plants that will be smothered, and your plants will come out all right.

Mr. Chandler. In the spring of the year should the straw be raked into the rows or taken off entirely?

Mr. Smith. I would say in answer to that question that I would follow Mr. Brimhall's plan. I would plow between the rows and I would rake the straw back and leave it there. I mentioned this same thing last winter and some differed with me; I have since investigated somewhat, and from what I saw last summer, and from what I have learned by inquiries, I would say that whatever cultivation is given the strawberry it should be done between the time of gathering the fruit and the time that it froze up in the fall of the year; that the ground should not be disturbed in the ensuing spring at all. If you grow in rows mulch your berries, as Mr. Elliot says, just enough barely to cover the plant slightly; let the covering be raked off in the space between the rows, and in this way you will get better results than you can in any other way. This is my conclusion from what I have observed this past season.

Mr. Chandler. I think in our soil if you mulch it will have a tendency to retard the growth. I think that the straw should be raked off so that the sun can warm up the ground. It can be put back again just before the berries are ripe.

Mr. Brimhall. That is the way I do. I take the mulching off and put it back again.

Mr. Smith. What kind of soil is yours?

Mr. Chandler. Sandy loam.

Mr. Smith. And what is yours, Mr. Brimhall?

Mr. Brimhall. Clay.

Mr. Smith. That will illustrate the difference. With a sandy soil leave on the mulch.

Mr. Gilpatrick. On wet soil I would prefer corn stalks, and would make them very thick so as to let in the snow.

Mr. Pearce. In regard to mulching strawberries, I think it depends very much on the variety that you are going to mulch. If you have the Wilson or a tender variety you will always have to mulch.

Mr. Smith. Don't it depend about as much on how they are cultivated before mulching, whether in rows or on hills; whether suffered to run broadcast among the weeds, all over the ground, or kept clean with the runners clipped.

Mr. Pearce. I think there are very many strawberries in the country that don't need any mulching because they are already mulched. I have seen acres of them.

Mr. Harris. Mr. President, those strawberries need something. With us last winter strawberries winter-killed. I wouldn't give a cent to have my strawberries covered. But the time we need the mulching is in the spring because the drought cuts the crop short, and it always makes the berries smaller; and sometimes they become dried up and are utterly ruined in one or two days.

Mr. Pearce. What I meant to say was there are a great many beds where they are covered up with weeds.

Mr. Harris. Did you ever get any berries from that kind of a patch?

Mr. Pearce. No, never.

Mr. Kenning. I would ask where strawberries are raised on the bleak prairie and mulched, whether the snow would not have a tendency to bank up five or six feet deep and smother them? Whether that will have a tendency to kill out the plants or not?

Mr. Smith. I don't think they would be successful there unless they ridge the ground somewhat and plant on the ridge. I would mulch lightly if the ground is frozen. To leave the ground level, as on sandy land here, when you put mulching on you find them in the same condition in the spring, all frozen into a bed of

ice, and dead. If you ridge your ground so as to carry off the water and leave your plants out of the water, and mulch very lightly after the ground has frozen in the fall, then you wouldn't have any trouble with them heating.

Col. Stevens. Where Mr. Kenning lives, at Bird Island, it is prairie and the snow blows off in the winter much more than it does here or east of the Big Woods. I raised strawberries out in McLeod County without any mulching at all; but it was when there was a good covering of snow on them in the winter. When there was no snow, as a matter of fact, they all winter-killed. When there was snow, or they were mulched with corn stalks, I never knew of a plant to be killed, even if the snow might be two or three feet deep. But as a matter of fact the snow in Renville County usually is not as deep as it is east of the Big Woods.

Mr. Tuttle. I don't think there is any danger of smothering the plants when mulched with corn stalks. I have never discovered an instance where they would not come up through the corn stalks, when coarse stalks were put on.

Mr. Harris. It is very difficult for us who are not acquainted with that prairie country to lay down a rule for them to follow. But I think from the facts elicited by this discussion we may conclude that corn stalks are the best mulching that we can recommend. I have never known strawberries to kill out by reason of the snow covering them unless there was something under the snow that caused them to ferment; the quantity of snow piled above don't affect them. I had a solid bed of ice on one of my beds and supposed my strawberries were ruined, but that year had the best strawberries I ever grew.

Mr. Elliot. I would inquire if there are any new varieties that are better adapted to our climate than the Wilson?

Mr. Whipple. I would like to have that question qualified; better for what purpose, whether for table use or for market?

Mr. Elliot. For dollars and cents.

Mr. Whipple. I would say there is as far as dollars and cents is concerned, that is for a near market. If you have to ship them you need the Wilsons, and I don't think there is anything that will compete with it; but the Crescent I think will compete if you have only twelve to twenty miles to carry them. I can raise a great deal more on the same quantity of ground than of the Wilson and they will sell just as rapidly.

Mr. Pearce. Mr. President, in regard to the different varieties I think that every nurseryman has an idea that the plant

that sells the best is the kind to raise. I have an idea that they would set the varieties they sell the largest amount of, and would be strong evidence that that was the best variety.

President Smith. The best advertised is not necessarily the best.

Mr. Pearce. The Crescent is good, and if a man has the right kind of soil and gives them the the right kind of cultivation he will have a good crop; and when you can send out a plant that universally in all kinds of soil and with all kinds of people have them get a good crop, that is the kind we want.

President Smith. That has always been the Wilson.

Mr. Pearce. Not necessarily; not in my experience. I have sent out thousands and thousands of the Crescents and never had any come back; I have sent the Wilson out and they said they failed. The Wilson is a good and profitable berry.

President Smith. I would state for the information of Mr. Pearce that I bought a quantity of the Crescent paying \$2.50 a hundred for them and they proved worthless and I was compelled to dig them up and throw them away. My soil was rich and they wouldn't produce any berries. I have never been able to grow the Crescent Seedling with any degree of success while I have had no trouble with many other varieties I have grown.

Mr. Whipple. What is your method of setting plants?

President Smith. I grow them in rows and have the rows about two and one-half feet apart.

Mr. Whipple. I set my plants about two feet apart in the rows and the rows about four feet apart.

Mr. Tuttle. I have grown the Crescent Seedling on very rich ground, but I never manure the ground where I put the Crescent Seedling. I probably set the first Crescent Seedlings that were set in Wisconsin. A friend of mine originated them. I saw the plants two years before they were sent out. To look at the soil on which they were grown it would not be supposed it would produce anything; you could hardly find any poorer soil anywhere. It was on the sand and among jack-oaks that the Crescent Seedling was originated. It was quite sandy, poor, thin soil. I think I have seen the Crescent on very rich soil, where it was highly manured, and it would hardly do anything; but I don't think there has been a plant produced that will succeed better in the hands of everybody and produce more bushels of fruit. And yet my friend Mr. Parmele says that he has something that beats it; and if he says he has I know he thinks he has; I have known him for some forty years.

President Smith. With me the Captain Jack has produced well; it is very hardy and produced good crops of berries.

Mr. Smith. Mr. Jenkins has some very fine appearing strawberries and thinks he has something very nice. I should be glad if he would exhibit them and tell us about them.

Mr. J. W. Jenkins. I see by all this discussion here that I am an odd sheep in the flock; I see by what has been said that there is no one that takes the same course of growing a berry that I do. In regard to mulching, I never do that. I just merely put out my berries, working them sufficiently a portion of the season that I set them out, and then I give them up entirely and don't do anything more with them. I pick from those berries three years after that. I generally get a good crop. The weeds that grow after I have done working my berries I consider the best mulching that can be had. I have studied that, or got that in part by studying the nature of the wild berry. In my experience in going out and picking the wild berry I have found where there are woods and grass to protect them to a certain degree I have found the best berries, and I have found the same to be the case in growing tame berries. I have grown a good many varieties of berries. I have been at it some twenty years or over and have succeeded in growing a berry from the seed. I started that berry nine years ago. I have kept that within myself with the exception of four or five where I sent out the berries last year who have grown the berries and fruited them. I am selling a few of the plants. As to this fruit which I have exhibited here I would say that it was the remotest idea that I should exhibit it in such a place as this; I merely put up that fruit as a sample to canvass with, and was using it for that purpose when by chance I met Mr. Smith on the road and by our conversation the matter was brought out, and he prevailed upon me to come to this meeting and exhibit it; I have done so. I am not a member of your association, but merely did this at his request. Any questions that any gentleman may ask in regard to this berry, I would be willing to answer if I can.

Col. Stevens. I would ask Mr. Jenkins where he propagated them?

Mr. Jenkins. On my farm in Hennepin County.

Col. Stevens. Is it a seedling variety?

Mr. Jenkins. It is a seedling. It is said to be from the Golden Medal. I had it from that, and I suppose it was.

Col. Stevens. It is a very valuable berry; it looks to be about the largest I have ever seen.

Mr. Jenkins. If you will come to my place I will show you my berries, and I have weeds growing in there that are as high as my head.

Mr. Whipple. Is that a perfect plant?

Mr. Jenkins. Yes.

Mr. Whipple. When the spring of the year comes, do you gather the weeds and take them out of the way?

Mr. Jenkins. No, sir, not unless there are too many weeds to bother about picking; if there is, I let them stand until there is no danger of freezing, and take a scythe and run over the bed and let them drop on to the bed. I take off a certain portion from the bed where they are too thick. That is all I ever do to my berries.

Mr. Whipple. Does not what some call the native blue grass trouble your soil? It is a wild grass that grows upon a wet soil in this country. I cannot succeed with berries if I let them stand two years, without having this grass take possession of the whole ground.

Mr. Elliot. I would inquire, is this a firm flesh, or good market berry?

Mr. Jenkins. It is; it stands carriage well. I don't know of a quality that would add to the berry. It is as fine a shipping berry as I have ever had, it is the finest table berry I have ever used, and in every respect it is the best berry that I have ever seen grown. It is a late bearer, and holds in bigness in size better than any other berry I have ever seen; and another thing, they don't run to vines; they are perfect in bloom, need no fertilizer. I don't work them only the first year, and only until about the middle of July, and all the weeds that grow after that I consider a benefit. They are very vigorous in their growth. I mark my ground to set my berries the same as I plant corn, three feet eight inches one way and about two feet apart in the rows the other way. I never cut a runner, never disturb them—let them grow as nature designed they should.

Mr. Smith. What kind of soil have you?

Mr. Jenkins. I have different kinds of soil on my farm and have tried all parts of the land, and it don't seem to make any difference, although sandy land brings them earlier. My farm is generally a black, sandy loam. I have got this method of cultivating by being constitutionally lazy. (Laughter.) If I haven't I guess it has been a fast growing disease, and it has got fast hold of me.

President Smith. Then you consider them a first-rate lazy-man's berry? (Laughter.)

Mr. Jenkins. Well, I consider them about that.

Mr. Elliot. That is not the berry we want for our Horticultural Society.

Mr. Grimes. I move, Mr. President, that a committee of three lazy men be appointed to test the merits of that berry. (Laughter.)

Mr. Whipple. I move that Mr. Grimes be the chairman of that committee. (Renewed laughter.)

President Smith. I don't hardly know where to select such a committee among old friends here.

Mr. Whipple. If it is in order, I have an advertisement here of a new kind of raspberry that I would like to show and see if there is anyone that knows anything about it; I do not. It is called the Hansell.

Mr. Dartt. Would it not be better to wait till we have the report of the committee on new varieties?

Mr. Elliot. I move that we take up the subject of the cultivation of raspberries.

President Smith. It will be in order without a motion. You can ask your question whether anybody knows anything about the Hansell.

Mr. Whipple. Would that come under cultivation?

President Smith. It is in order. If this is the Hansell I would say that I planted some last year.

Mr. Smith. I would ask Mr. Tuttle if he has ever grown the Hansell?

Mr. Tuttle. I never have.

Mr. Dartt. Who has the plants for sale? That is what I want to find out.

President Smith. I will state that I received from Storrs, Harrison & Co., of Paynesville, O., some of those raspberries and I set them out; but I have no plants for sale and don't expect to raise any for that purpose. I only planted a couple of dozen; but I was very favorably impressed with the growth and the fruit. I had some fruit, but I wish to say that in my opinion it requires time to test whether they will be of any benefit to us or not. I sent for fourteen varieties last year and tested them, but am not able to make a report till another year on their merits. Capt. Goldin, of Wabasha, has raised them for some years and also the Superb. I wrote to him last spring in regard to it.

Mr. Whipple. I notice they state it stands the cold winters, and they call it more of an iron clad than the Turner or the Philadelphia.

President Smith. There is another new variety that I received from Mr. Campbell last year that is extolled very highly. It is the Crimson Beauty; said to be very hardy.

Mr. Grimes. Has anyone had any experience with that variety? I set out a few plants last spring.

President Smith. I think I set about fifty plants last year; that is all the experience I have had. Have not carried them through the winter yet. I may say that side by side, the way they grew this past summer, the Hansells did the best.

Mr. Pearce. Mr. President, what has been the result of the Cuthbert, so far as you know?

President Smith. It has been first-class about St. Paul, and so far as I know it has done well.

Col. Stevens. Is it better than the Turner?

President Smith. It is more firm and will bear transportation better and it is therefore a better market berry than the Turner.

Mr. Whipple. I suppose it holds about the same grade as the Doolittle; a better berry in the market but not as good to eat.

Mr. Harris. The Cuthbert is a very good berry, far superior to the Philadelphia.

Col. Stevens. Isn't there a great difference in the manner of growing the Turner? I understand that Mr. Whipple, at Northome, raised the Turner and the fruit was perhaps one-half larger than those raised in the immediate neighborhood, from the simple fact of mulching and the use of fertilizers. I understand he had Turner raspberries larger by one-half than those usually grown.

Mr. Sias. We have succeeded in finding the lazy man's strawberry, and now I think if we want to find the lazy man's raspberry that we might recommend the Turner for that position.

President Smith. I don't think you are right about that; for you will have to take off the suckers that sprout up from the Turner plants or you will not get many berries.

Mr. Shannon. I would like to state my experience with some Black Caps and get somebody to help me out. I had a row of plants that were promising at first and after they bore the berries dried right up.

Col. Stevens. What was the situation?

Mr. Shannon. It is on a side hill. They were planted in a row and had a northern exposure.

Mr. Pearce. What was the variety that dried up?

Mr. Shannon. About half of them were the Doolittle and half said to be the wild raspberry. They were not Thornless.

Mr. Smith. I can tell you how you can raise raspberries: stake them or put a trellis along the rows, of the proper height, so that you can cover them a little in the winter. I have succeeded in doing that in two ways. I set the plants close together and drive some stakes and put some cleats on to hold the canes up about two feet from the ground. I pinch the ends of the canes back. In the fall I throw a few corn stalks along on the top of that trellis to shade and protect the bushes; in that way I get a crop of black raspberries every year. The other way is to keep them in girdles by driving down stakes or slats around the canes so as to make a frame-work and keep them up in that way, pinching them back so as to make a second growth come out. Cultivate around the canes three or four inches deep, and in the fall throw a little handful of corn stalks over them, or marsh hay. Then in the spring work them in among the roots. I think Mr. Shannon in this way would have been able to get some berries even if the canes did kill down some. If you fix your trellis so the snow can't break them down and throw in some mulching in the fall, and in the spring work it into the soil there will be no difficulty in getting some berries. They ought to produce a big crop every year.

Col. Stevens. At Mr. Shannon's place it is different probably from most other places in the State. At Granite Falls there is a heavy granite deposit, and I apprehend you would not go very far before you reach it.

Mr. Shannon. I had the same fruit on a hill and I moved it down and had the same experience in both places. I gave a friend of mine some roots and he planted them about in the middle of our county in a different kind of soil, although the exposure is about the same, and he doesn't get any fruit. He told me last spring they seemed to come through the winter all right and showed blossom but after that dried up. It seemed to him there was not strength enough in the roots to ripen what they had started.

Mr. Smith. That is the whole trouble; there was not sufficient vitality to the plants. You will frequently meet with this trou-

ble and you cannot make a surety of a crop every year unless you cover them every winter. The only way is to have some sort of trellis, so that they can be kept from breaking. You can raise them without, but cannot with certainty. I would as soon have ten plants with protection as one hundred without protection. Then, when I have the plants set, I would mulch them very thoroughly.

Mr. Harris. Mr. President, some of that I believe and some I don't. (Laughter.) I believe the gentleman over there (Mr. Shannon) has been swindled on the variety of berries he got and I will tell you why. I have been very successful in raising the Doolittle and the Seneca, and some other kinds of berries. I sent down to some place in Illinois and bought five hundred plants and never got five hundred or two hundred quarts of fruit from them. Now, if the fault with his is not in the bushes I think the corn stalk mulching is the very best thing he can follow; but don't be afraid of getting it on too deep. We feed all our corn fodder and try to have it used the same winter. On the outside there is frequently a little that is only bruised by the cattle and horses tramping on it. If you use that your raspberries will be much better. I don't lay the bushes down but mulch under them.

Mr. Kenning. I have tried the Black caps three years and have had the same experience as Mr. Shannon. Instead of having berries there are one or two little seeds on the bushes that dry up. I finally became disgusted with them and dug them all up. Got my plants from a party at Hastings.

Mr. Shannon. I would state that I got about half my plants from my father in Blue Earth county, and with the same kind of plants he had great success. The others I got from a gentleman who had taken the wild Black caps and had lots of fruit every year. I am quite sure I had the Doolittle plants, so I think the trouble was not on account of the kind. I think it must have been something in my soil or in my head.

Mr. Harris. I would make one more trial and try mulching under them thoroughly with corn stalks.

Mr. Shannon. My man put manure around them last winter.

Mr. Gilpatrick. I planted the Doolittles twenty years ago. I have succeeded in raising them every year, covering with nothing but dirt during those past twenty years.

Mr. Pearce. My experience is that every variety kills, although some say not. There is a great deal in the selection of

the ground to plant on. They will bear a good deal of shade. A grove on the west or south is very good, the south the best. As a general rule we have to cut them back in the spring until we get sound wood. If your plants are injured they are bound to come out to the tip end, but you get small blossoms and small fruit; it is bound to do it. Don't be afraid to cut back to sound wood. You may have to cut off two feet. I have trimmed them when they were thought to be dead and would cut some stalks clear down; but have had a good and paying crop. Unless you have a favorable locality you will find that the Black caps generally winter-kill. The same trouble is found with the red raspberries, and you have to trim to the sound wood. If this rule is followed I think you will have no trouble with the berries drying up.

Mr. Whipple. I have had only twenty years' experience with berries. My rule is, if I want to get a crop of black or red berries, to keep the ground in such condition that when you are picking the fruit you can take the dirt in your fingers and make it into mud balls. In order to do that you have to mulch the ground. Mr. Harris is right as far as he goes; he has not got quite enough of the amber cane yet; that holds the moisture the best of anything I have found.

Mr. Harris. I have seen that used and I know it is first rate.

Mr. Underwood. If it is necessary to emphasize the importance of mulching I might do it by stating some of my own experience. I had a Swede in my employ who could not understand a word of English, and I set him to mulching some raspberries, making him understand by signs what I wanted him to do. About an hour after he came around indicating that he had the job done. I sent him back and had him do it over again, and an hour after repeated the same thing. He was pretty well along in years and thought he knew something, and was disposed to get provoked about it, and when he came around the next time I found he had put on the whole pile of manure, and it was at least a foot and a half thick. But I would say that I never had so many berries before or since off the same quantity of ground as I had from that piece. So I think that all that has been said in favor of mulching raspberries has been said in the right direction.

Mr. Pearce. Speaking of mulching, I want to say one word more. Mr. Whipple had certainly the right way of mulching with the amber cane straw; he put it on about a foot and a half

thick. He was very partial to the Turners. I have been growing them on my grounds, but mine have not been mulched. My berries were a little under size last year. We had a good many berries. I have made up my mind that I am going to plant out my berries and plow them out and reduce the quantity of stalks; but I don't think I shall mulch any, because I haven't anything to mulch with. We want an early bearer; it is the early variety that brings the money, and I think that is the Turner. I think by cleaning out the rows I can get fair sized berries. We want to get them two weeks earlier, and if you don't, the Philadelphias come in. People want berries in the season right along, and the earlier the better. That is the reason I am opposed to mulching; it brings the finest kind of berries, but it brings them in market a little too late, when the high price is over. I would rather have a little smaller berry and have them very early, when you can get twenty-five or thirty cents a quart; but if you want big berries you will get them by mulching.

Mr. Jenkins. I don't know very much about raspberries, but I would like to inquire if there is any advantage in pinching back?

Mr. Smith. Yes, they ought to be cut back in order to get a vigorous growth.

President Smith. My experience is that you don't need to cut them back, but I recommend pinching them back when the canes are not over two feet high. As they grow out I would pinch them back.

Mr. Whipple. I think the president has hit it; and the time to do that is just when you are expecting your berries to ripen. When you are out in the patch looking at the bushes, pinch the ends back, and by the time you get through looking for berries your briars will all be pinched back. That is the time to do it.

Mr. W. Muzzy, of Fergus Falls. I live in Otter Tail County and am not a member of your society, and don't know as I have a right to take part in this discussion; but I would like to ask about whether it would not be necessary for us in our locality, to remove this mulching so that the sun would cause this moisture to dry off so that the canes will ripen. I am trying that to see if they will not kill back. I also think that to be sure of success we need to have our patch of raspberries somewhere in a protected place where the southern sun can get in and warm them up. I notice that some of my neighbors have lost their canes by the sun warming them up too soon. Then the frost would kill them. I would like to hear a word for our enlightenment up there.

President Smith. I would state that we have no fruit growers in our society here from the northern part of the State that I know of that would report in regard to that. But I would also state that in the regions of Lake Superior they have an abundance of wild raspberries which grow well in either the shade or in the sun. That is a very different locality, but they ship berries from there in large quantities.

Mr. Muzzy. I would say that we also have the very finest wild raspberries in our section of the country that I have ever seen in any country.

Mr. Smith. Mr. Morford, who lives up on the line of the Northern Pacific road, had a splendid crop of berries on his place. I wrote him to send me a letter to tell how he did it, but I have not heard from him yet. I would like to inquire if anyone has had any trouble with mice working in their raspberries, and if so, what they have put in as a preventive.

Mr. Whipple. If you put in wheat straw or something that has grain in it, it will draw the mice and they will girdle the canes.

Mr. Harris. I have lost a good many bushes where mice got in and gnawed them off. A good way is to take a little corn and soak it, mixing in a little strychnine, and put it into an oyster can and poison the mice, and then you are safe; and I believe some of my neighbors use Paris green. The mice are apt sometimes to get in any way and destroy the Blackcaps.

Mr. Whipple. The principal preventive I have is a good shepherd dog that takes all the rabbits, and some good cats that keep the mice down.

Mr. Harris. This is a short-tailed field mouse that does the mischief, and sometimes comes in from the woods.

Mr. Ford. Mr. Chairman, I lost my entire crop of raspberries. They started well and soon seemed to die out. If there is any gentleman here who has had a similar experience, I would like to know from him his opinion of the cause, and to know the remedy.

Mr. Smith. Repeat your experience.

Mr. Ford. I planted about an acre of raspberries of Cuthbert, the Philadelphia—about a thousand Cuthbert, the balance Philadelphia and Turners. I planted them in the early season; they sprouted well and grew so you could see the buds coming through the ground, and then began to die after being only about four inches high; so by July I hadn't any.

Mr. Whipple. Did you examine to see if there were any cut-worms?

Mr. Ford. I attributed it to them.

Mr. Smith. I think I can explain that. I planted five hundred Philadelphias and they all went in the same way. They were out of the ground a little too long before they were set. The long roots all died, but they sprouted up at the centre, lived through and grew up, while the old raspberry cane died a perfectly natural death. The new roots made no new wood; I examined a number of them. When you set out a year-old cane of the red raspberry, unless it throws up a sucker from below the ground, I think it is going to die by the first of August. Yours did not throw up any suckers, did they?

Mr. Ford. Yes, sir.

Mr. Smith. Well, mine did not; I think they just died a natural death, because there were no new roots or new wood.

Mr. Ford. My plants were set out in the spring, and were very thrifty, and had very fine roots, but the suckers seemed to die.

Mr. Pearce. Did you notice whether there were any cut-worms?

Mr. Ford. There were plenty of cut-worms.

Mr. Harris. I think likely that was what was the matter.

Mr. Pearce. We had a terrible time with a species of cut-worms; they were not common cut-worms, but seemed to be a sort that went off into the grass and staid, and came out at night. They would cut off the leaves. I set out raspberries and they would cut them off. They injured my plants very much. It never made its appearance there till last season. It is not the common kind of cut-worm, but it is a very active worm.

Mr. Ford. I think my observation agrees with that of the gentleman; I think it is not a common species of cut-worm.

On motion of Mr. Sias the meeting was then adjourned till 7 o'clock in the evening.

EVENING SESSION.

TUESDAY, Jan. 20, 1885.

The meeting was called to order at 7 o'clock in the evening by President Smith.

The following communication was received and read:

RESIGNATION OF MR. MENDENHALL.

MINNEAPOLIS, Minn., Jan. 19, 1885.

Truman M. Smith, President State Horticultural Society of Minnesota,

DEAR FRIEND: Owing to continued ill health I hereby tender my resignation as entomologist of the society, not being able to properly perform the duties thereof, and I ask its acceptance.

Very respectfully,

(Signed,)

R. J. MENDENHALL.

Mr. Pearce moved that the resignation of Mr. Mendenhall be accepted.

Mr. Grimes. Before that motion is put I would like to say a word. I must say that it is with a good deal of sorrow that I learn of the resignation tendered the society. Mr. Mendenhall is, perhaps, one of the best entomologists in the State, as well as one of the most earnest workers in the State. Before that motion is carried, I think the society should express its sincere thanks for the labors he has performed. We have never paid him for anything he has done, although he has made thorough investigations and faithful reports, as will be seen by reading former reports of the society. I would move that we tender him a vote of thanks.

Mr. Harris. I should hate to be obliged to accept the resignation at this time. It seems to me we had better try and get him to prepare an article for our forthcoming report. I staid with him last Friday night and we talked the matter over. I understood he was willing to prepare such a report. He seemed desirous that the society should appropriate a small sum, from six to ten dollars to purchase illustrations for it. We do not want to work a sick man, but it does not seem as if we could well spare him until the coming report is published. We may accept his resignation so far as not to re-elect him for the coming year. Mr. Mendenhall has been a generous and noble member of the society. He has stood by it for years. At one time he and Mr. Elliot each loaned the society \$100 to get out the report, and it was a number of years before we were in a condition to repay it; but neither of them charged us any interest on the money. He has been one of the live members of our society. In addition to tendering him a vote of thanks for the services rendered us in the past, I would move that it be resolved that we exceedingly re-

gret this act of tendering his resignation. Only last week he resigned a similar position in the Academy of Natural Sciences at Minneapolis. I have no doubt he will furnish articles for us. Two years ago he was elected entomologist of the society, and re-elected last year. It is an election that lasts for one year. We can accept his resignation, but we must not give up hope of getting a report from him.

President Smith. I would suggest that a committee might be appointed, consisting of Mr. Harris, Mr. Elliot and Mr. Grimes, to wait upon him and convey to him the thanks of the society and ask him to prepare a report for publication.

Mr. Pearce then withdrew his motion.

Mr. Underwood. If you will allow me to offer the motion suggested by the president, I would move that the committee named be appointed to confer with Mr. Mendenhall, and express to him the thanks of the society for the valuable services he has rendered us, our regrets at his ill health, and the committee be instructed to make such further arrangements as they may see fit with regard to the forthcoming report; that they be authorized to provide for illustrations. I will offer that as a resolution, and will reduce it to writing if desired.

Mr. Dartt. Mr. President, it seems to me if we simply accept his resignation and tender him a vote of thanks, with a request to prepare an article for publication, that will be the simplest and easiest way and most satisfactory; the less machinery we have, if the object is accomplished, the better.

President Smith. I understand he is willing to prepare the article if these cuts are furnished.

Mr. Harris. He has consented to furnish an article, and he requested me to bring the matter before the society if he was not able to be here, to have a small appropriation made, not to exceed ten dollars.

President Smith. I know that he has always been a worker in the society, but I do not want to force my views upon the society in any way.

Mr. Smith. There does not seem to be any objection to the furnishing of these cuts, and I can see no objection to the committee; I am satisfied they can do this better than we can express it in writing, and I think we can leave it to them. I would be in favor of employing a stenographer to assist him if he is unable to do the work of writing out the report himself. I think we need a little more instruction upon these subjects, such

as a good entomologist can give us. We want to investigate these matters, and get all the light we can on the subject.

The resolution of Mr. Underwood was adopted.

The following communication of Hon. O. M. Lord was then read:

FRUIT REPORT FROM O. M. LORD.

MINNESOTA CITY, Jan. 19, 1885.

Apples, especially the early kinds, were abundant this year throughout Winona County. The local markets were well supplied with Duchess, Tetofsky, Fameuse, Haas, numerous varieties of crabs, and some seedling apples. St. Lawrence, English Russet, Utter's Red, and Wealthy were also in the market. Strawberries were very abundant, but frequent showers interfered with the picking. Red and black raspberries were plenty and good crops of blackberries. There was also a good supply of native plums.

The weather in the fall was considered favorable for fruit trees to mature the new growth, and it is believed they were in good condition to withstand severe cold.

The experiment station here is hardly worthy of a report, as only a small beginning has been made. The plum cions furnished by the society were set and have made a fine growth; also cions from seedling apple trees of merit grown in this vicinity. A few trees one year old, and some two years old, of kinds that have not been tried in this vicinity, have been planted as experiments. There are also thirteen kinds of native plums, some of them in bearing, which are receiving special attention.

The following letter was then read from Mr. E. Wilcox, proprietor of Mount Hope Nursery, near La Crosse, Wisconsin:

REPORT FROM E. WILCOX.

MT. HOPE, NEAR LA CROSSE, WIS., Jan. 18, 1885.

T. M. Smith, St. Paul,

DEAR SIR: We have had two cold winters before, but this generally is colder than the two preceding. With me, however, the thermometer has only touched 32° once this winter, while last it went down to 36°. What surprises me is the great difference in

reports of cold this winter in localities only a few miles apart. In La Crosse, two miles from me, 38° to 40° below; at Galesville, 30 miles, 54° below; at other places 40° to 49°. Have we any kind of standard apple except Duchess, and some seedlings which have stood for 30 years, that will stand 54° below? Time will tell.

Now, about fruit. Last year the Duchess in some orchards bore heavy crops of fair, large apples, while in other orchards only a few miles away it was entirely ruined by the apple gouger; this and the codling moth are, in my opinion, the great enemies to successful apple-growing, with such hardy trees as Duchess and some seedlings which are coming to the front, in the Northwest; the Wealthy is not one of them, however. This tree I believe in for these reasons: Its early and great bearing, good quality and good keeping. I keep setting it every year; it will bear a few crops and die. To class it with Duchess for hardiness is all bosh.

The apple crop last year was what might be called a good one; the following kinds bore heavy crops: Wealthy, Utter, Fameuse, Haas, St. Lawrence. I saw a few trees of Golden and Perry Russet bearing so heavily and such nice fruit that I almost regretted that I had condemned both years ago. Whitney and most of the crabs bore well, except the Transcendent, which was nearly a failure. All were badly worm eaten.

Small fruits, such as strawberries, grapes and raspberries, such as Turner and Gregg, were fair crops; the raspberries, too, without protection; Cuthbert nearly a failure; blackberries the same; De Soto and other wild plums, with me, blossomed full, but the fruit nearly all dropped when quite small. What is the cause? Mr. Peffer says that they need a fertilizer the same as the strawberry. I attribute it to frost. A hailstorm in July nearly ruined my grapes and injured my apples very much. E. WILCOX.

Mr. Harris. I would like to make one observation in regard to the location of Mr. Wilcox's nursery, as regards his plum orchard. He has a northern slope; his trees were full of blossoms, and before the plums were half grown there was hardly one left on the trees, and I cannot account for it. I only visited his place once this past season. I have been there when his trees were in blossom and looked like a sheet, and then in mid-summer there was nothing on them. He attributes it to the effects of the sun or to the frost, I believe. Mr. Peffer went out and looked at them and he thought they didn't fertilize themselves; but I am certain he has ten or a dozen varieties.

Mr. Smith. Does not the northern breeze that comes down that northern slope through the Trempeleau Valley cause the trouble. He cannot get a northeast wind.

Mr. Gideon. We have had ours cleaned out several times when the trees were set full of blossoms. On examination of the fallen fruit we found the mark of the curculio on every one.

Mr. Harris. Where this nursery is located the sun does not shine on it fairly for an hour after it shines on our side of the river. Some of my trees hang full of fruit till they are ready to break down.

President Smith then proceeded to deliver the annual address:

PRESIDENT'S ADDRESS.

Ladies, Gentlemen and Members of the Minnesota State Horticultural Society:

Twelve years have passed and gone since the present organization of the Minnesota State Horticultural Society and the adoption of the present constitution. On Feb. 27, 1873, the first act was passed by our legislature giving us aid and authorizing the printing of our reports. Although the nucleus from which the society originated—the Fruit Growers' Association—had its origin and start at the State fair in Rochester, A. D. 1866, yet from that date commences our history as a society.

Now, when we look back and see the condition of fruits growing in Minnesota at that time, we find there was scarcely fruit enough grown in the whole State to make a fair display at a county fair. Compare it with what was raised in 1883, according to the report of the commissioner of statistics, 180,735 bushels of apples, and from 200,000 to 300,000 pounds of grapes, and with the thousands of bushels of strawberries, raspberries, currants; and that the quality of our fruits and berries, was of the best, as none can dispute.

The award of diplomas and medals at the Centennial Exposition in 1876, and the award to our society of the Wilder silver medal by the American Pomological Society in 1883, at Philadelphia, will show how they were appreciated by others than ourselves, as at these exhibitions we came in competition with all the states in the Union, and carried off one of the only four awarded, and this for display of apples and grapes. And our

secretary, Mr. Gibbs, writes he now has and is putting up—January 12th, in New Orleans, over two hundred bushels of Minnesota apples, and that he has as fine specimens as any shown from any state, but not as many varieties. We now have single orchards that have produced over 1,000 bushels of apples per year the last four years; and vineyards that have produced from two to four tons of grapes for ten years or more in succession. We have farms that have raised hundreds of bushels of strawberries, raspberries, etc. Who can say that we can not and do not grow fruit here in Minnesota, and that this society has done nothing towards the development of fruit growing?

We have but just commenced our labors; we want more and hardier and better fruits of all kinds, and with the aid of the State experimental fruit farm and the experimental farm at the State university and our own experimental stations, we hope in time that Minnesota will be able to raise more fruit and cheaper, so that every man, woman and child in our State can have a full supply and plenty to ship to other less favored localities, and that every school house and farm will have its shade and ornamental trees and flower beds; in other words, that Minnesota will be a State worth living in, and we as a society hope to help to bring this about. But it will take time, for it has taken a long time to bring our fruits to their present standard; but by the aid of kindred societies and cross fertilization and other modes, we hope and expect to advance farther in the future than in the past.

We have asked for and received State aid to a small extent and we have used it for the benefit of the whole State. Our meetings and information gained therein are not of the star chamber sort, for all are cordially invited to come and partake and to assist us in our great work. Very few can understand or imagine the difficulties and discouragements that the pioneers in horticulture had to contend with here in our cold and dry climate, and without any knowledge of what varieties would succeed, and what obstacles we have to meet and conquer, and what there is yet for us to do before we meet with that full and final success we yet hope to attain. But I sadly regret that one of our best and most valuable native fruits has been neglected and not as plenty now as it was fifteen to twenty-five years ago, when in its wild and natural state, without cultivation there was plenty for our own use here in Minnesota and thousands of bushels to ship to other markets; I allude to the cranberry which is now shipped here from New Jersey and other

states and sold for sixteen dollars per barrel this present winter. This is wrong. Our society, our State Agricultural Society and our legislature should all combine to bring about a different state of affairs in some way, for I will assure you that our State, or its citizens cannot afford to raise wheat for forty to eighty cents per bushel to pay for cranberries at sixteen dollars per barrel, wholesale, when we have a soil and climate that produced them in abundance in their wild state before the cattle and other causes destroyed them. The value of this crop and the demand for it in all the cities of the United States and other countries, and the ease and safety with which it can be shipped, and in consideration that it can be kept well in a perfectly fresh state the year around, and the healthfulness of the fruit, all demand that it should receive the best care and attention, and we with others should encourage the cultivation of the cranberry as one of our very best fruits adapted to our climate.

Another great want of this society and the farmers of this State, is a good, competent State entomologist who should be located at the State university. Our agricultural papers should circulate all the information he could give them, broadcast throughout the State. Our insect enemies are almost too numerous to mention and most of us are unable to distinguish our friends from our foes; we all need information and should be apprised of our worst enemies among insects and how to combat them. They are many of them small but in many instances will be satisfied with nothing less than three-fourths to seven-eighths of the entire crop. The expense would not need to be much and I would recommend the appointment of a proper committee to bring the matter before the present legislature to ask them to provide for the appointment of a State entomologist in the interest of the entire State. If their interest in fruit growing is not enough the chintz bug, the potato beetle, the grasshopper and the Hessian fly, and many other insects that trouble the farms as well as gardens and fruits, should all act as inducements for them to help us and themselves at the same time.

In former years it has been customary for this society to appoint a committee to visit, examine and report to this society, the State university farm, State experimental farm, and I would add, the State reform school, and in that way much can be learned through our report which receives a large circulation. At one time the State reform school took a great interest and made a good exhibit at our State fairs in both horticulture

and floriculture, and would it not be to the advantage of the State and the inmates to have these trades and the interest in them increased in some way that they might send out more competent help in that line than can now be obtained.

I will call the attention of the society to the practice of paying salaries before being earned, or in other words of paying a quarter's salary at the beginning or middle of the quarter. I found such had been the practice and, of course, I could not well adopt new rules; but nevertheless I believe it wrong and would call your attention to it so that by a vote of the society it may be stopped, and it may save us from some trouble in the future; at least it can do no harm to have a time stated by a by-law or vote so that the president and secretary will know and understand when orders should be drawn.

I hope all the expectations and benefits to our State from our State exhibition at New Orleans may be realized, and if within the power of human efforts and the possibility to do so, I believe our secretary, Mr. Oliver Gibbs, Jr., and Prof. E. D. Porter and their assistants may help all they can to accomplish that result. With their knowledge and experience in such matters I think Minnesota has her interests intrusted to good men, and I believe this society and its members have and will aid them in every way they can. And this brings to mind that the next meeting of the American Pomological Society will be held at Detroit, Michigan, next September. In order to keep up our reputation it behooves us as a society to make the best show possible of fruit, especially of apples and grapes, which will then be just in prime for exhibition. We should make extra efforts to win another medal, or some other prize, and show them and our sister states we can show the finest fruits as well as number one hard wheat, and that we can and do grow almost anything that can be produced from the soil. I would recommend that you, at this meeting, appoint one or more suitable delegates to attend that meeting, to get up and take charge of the collection of fruits, and that you appropriate a sufficient amount for the same, and by commencing early and systematically the work can be done much cheaper and to better satisfaction to all parties concerned.

I must not forget to call your attention to the need of economy; our resources are small and the amount we receive from the State and members will not go far in large expenditures or pay big salaries, and so we must economize in every way consistent with our aims and the work to be done, and do the most good for the least

money. I hope you will be able to show the legislature and the public all the money we receive is fairly and honestly spent for the advancement of horticulture and the public welfare.

I would here recommend that our society give attention and time for discussion to floriculture and vegetables, and some time to forestry. We should especially encourage the cultivation of asparagus, rhubarb and such other hardy things that are of easy and simple cultivation and are in demand for home use and for market, and which can be grown on the farm or in the smallest yard, are perfectly hardy and of the easiest cultivation, and will yield more satisfaction to the masses for labor and money than almost anything else grown.

I would say, in recommending fruits and shrubery for general cultivation, I think hardiness should be the first thing to consider, and ease and simplicity of cultivation, as well as other good points, and we should aim to make all our teachings plain and simple, that they may be understood by all in order that we may live to see more and better fruits, and as plentiful in Minnesota as potatoes and wheat this last fall. This is the wish and most earnest prayer of your president. Thanking you all for your kindness and assistance in the past years, I remain as ever your friend and co-worker in horticulture.

ACTION ON PRESIDENT'S ADDRESS.

Mr. Harris. The address of our president has been both interesting and instructive. It shows that he feels a deep interest not only in the welfare of the Horticultural Society but that he takes laudible State pride in the success of the cause in our midst; and I trust that every member of the society shares in the same spirit. It should be our purpose and desire to advance and develop so far as we may the resources of the great State of Minnesota, and hasten the time when it shall be in the very front rank among the sisterhood of states. Having all these things in view I move that we tender him a unanimous vote of thanks for his able and interesting address upon this occasion.

The motion was put by Vice President Sias and carried.

Mr. Smith. I move that the chair appoint a committee of three on the president's address to report on Thursday next in regard to the suggestions made therein.

The motion was adopted.

The chair appoints as such committee Messrs. J. S. Harris, P. M. Gideon and Ditus Day.

CRANBERRIES.

Mr. Harris. There is one thing that I would like to mention at this time. I notice that our friend Mr. Tuttle, of Wisconsin, is here. I noticed last winter that there were a good many cranberries around his place; and I think I have heard somebody say that he discovered a marsh somewhere up there, and of either himself or his boys improving it, and I would like to have the society by some method invite him, or his sons, whichever has the most to do with it, to prepare an article upon the growing of cranberries for the forthcoming report. I will therefore move that they be requested to prepare a paper on cranberry culture for the forthcoming report of our society.

The motion was carried.

MEMORIAL RESOLUTIONS.

Mr. Smith. Mr. President, there are some old men here and as many of the honored names of distinguished horticulturists are from time to time dropping from the active sphere of usefulness, it seems to me that it is but right and proper that we should show to the relatives of such persons, as well as to the people of the country generally, that we appreciate the services of a lifetime which has been devoted to the interests of horticulture. It pains me to-night to announce the death of Hon. Charles Downing, of Newburg, N. Y., one of the very brightest lights of horticulture. He died last night at the advanced age of eighty-four years. I therefore move as the sense of this meeting the following:

Resolved, That in the death of Charles Downing the horticulturalists of the United States have lost one of their best and brightest men; that we deeply mourn his death and remember with gratitude the labors of a lifetime devoted to the interests of horticulture.

Resolved, That these resolutions be embodied in our records and a copy thereof sent to the relatives and friends of deceased.

Mr. Gideon seconded the motion.

Mr. Harris. That is probably all we can do in the time we have; but it seems to me that if we could secure a sketch of the life and history of this man and what he has accomplished, so as to make a full page in our transactions, comprising a concise account of his life and service, place of nativity, etc., I would like to so amend the motion as to have that included, to be also spread upon our minutes.

Mr. Smith. I will accept the proposed amendment and volunteer to procure such information for the society.

Mr. Tuttle. Mr. Chairman, I have regarded Charles Downing as the foremost man in horticulture on this continent. I have had the pleasure of his acquaintance; I have met him at his house. He was one of those men who worked unselfishly during a whole lifetime for the good of horticulture throughout the United States. He spared neither time nor pains; his whole energies were devoted to informing himself and imparting this information to the whole country on the subject of horticulture. I never met a man who, in the time spent with him, more deeply impressed me with kindly feelings and with the unselfish work in which he was engaged, than Charles Downing. This is painful news to me as I had not heard of his death. I had letters from him recently and have been in correspondence with him for years. The whole country has sustained a loss in the death of one of its brightest lights in horticulture.

Mr. Smith. I can second every word that Mr. Tuttle has said. I believe that Charles Downing was one of those honest men who never lent himself to any selfish scheme of any kind for money. He was a pure, upright, honest, straightforward man; and to receive the word of Charles Downing for anything was to make it so. I think he was one of the best of men in that respect. Ever since I can remember I have been in love with the man and revered his name. What he wrote on the subject of horticulture showed that his heart and soul were in the work; he loved it, he loved trees and plants and flowers, lived among and enjoyed them. He has done more, perhaps, than any other one man to educate the American people in horticulture and floriculture, teaching them how to beautify their homes, their grounds and gardens. We need more such men such as was Charles Downing, men that speak and act from unselfish motives.

Mr. Harris. Mr. President, the shock that comes to us in hearing of the death of this eminent man is quite as appalling to those of us who love horticulture as to the public generally the news of the sudden death of our chief magistrate. For in thousands of homes in our land the name of Charles Downing is a household word. There is probably but one pomologist living whose name may possibly be more revered and loved, and that is that of Hon. Marshall P. Wilder, now approaching towards his ninetieth year—eighty-seven years of age. If we had time to devote to this matter our society could no doubt spend a whole day in eulogizing this great horticulturist.

Mr. Gideon. I had no personal acquaintance with Charles Downing. I have been in correspondence with him for twenty years. I could heartily agree with friend Harris that no other man in the United States stands higher among horticulturists; he was first. He led out and developed, you may say, all the balance. I would not detract one particle from the greatness of Mr. Wilder; he has done a great work for horticulture; but still Charles Downing led us all. He has done everything a man could do to promote horticulture in the United States. Two years ago I concluded I would meet Charles Downing, visit and spend Thanksgiving with him. I went down there and thought I would take him a little by surprise. When I arrived I found he was in New York City, crushed almost to death by the cars and was unable to receive company, so I never had the pleasure of seeing him.

The resolutions were unanimously adopted.

Mr. Harris. Mr. President, I would take this opportunity to announce that we have lost from our roll of membership two persons during the past year. I am unable to eulogize either of them or to say anything in relation to them, as I was not personally acquainted with them. Mr. Stearns, I believe, has died within the year, and last Sunday, Richard Porter, late of Olmsted County, was buried. He has been an earnest and a zealous worker in his way in horticulture, almost all his life, and was popular and favorably known wherever he has lived. I would suggest that Mr. Sias be requested to prepare a memorial upon his death; I will make a motion to that effect, as he was a neighbor of Mr. Porter.

The motion was adopted.

Mr. Smith moved that Prof. Porter be asked to prepare an obituary notice of H. C. Stearns, of Minneapolis, which was also adopted.

OLMSTED COUNTY HORTICULTURAL SOCIETY.

The following report was then read by the secretary, of the Olmsted County Horticultural Society, and the report of the fruit committee of the Rochester district.

The twelfth annual meeting of this society was held at the office of the *Rochester Post*, on Saturday afternoon, Jan. 3, 1885.

Meeting was called to order by the president, A. W. Sias, who announced that our secretary had resigned by reason of his late sad misfortune,—that of becoming almost totally blind,—hence it was necessary to proceed to the election of officers. After the renewal of memberships, in order to become legal voters, on motion of M. J. Hoag, meeting proceeded to annual election of officers, which resulted in the election of the following:

President—A. W. Sias.

Vice President—R. L. Cotterell.

Secretary and Treasurer—M. J. Hoag.

Executive Committee—A. W. Sias, M. J. Hoag and J. J. Cassidy.

Mr. S. Wedge moved that the secretary cause a notice to be published in each of the Rochester papers inviting all persons interested in horticulture to join the society. Motion carried.

TREASURER'S REPORT.

Amount of receipts.....	\$66 50
Disbursements.....	56 80

Balance in treasury	\$9 70
(Signed,)	M. J. HOAG,

Treasurer.

Number of annual members for 1885.....	50
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After some very appropriate and interesting remarks by our retiring secretary, Hon. S. W. Eaton, the society adjourned to meet on call of the president and secretary.

M. J. HOAG,
Secretary.

Rochester, Jan. 3, 1885.

The following communication was read from Rev. G. W. Fuller, of Litchfield, Meeker County.

REPORT ON FRUIT.

LITCHFIELD, January, 1885.

The past year gives us nothing new in the way of fruit. The Duchess and Wealthy continue to be the only large apples we can grow and too many of these yield to adverse conditions. The Transcendent is the only tree that retains its color under the repeated severe cold of this winter. All others are more or less colored.

The year has been a fruitful one. Large crops of strawberries, red raspberries, gooseberries, and currants well repaid the labor that produced them. Apple trees were also well loaded.

G. W. FULLER.

DISCUSSION.

Mr. Sias. I would say that the interest seems to be on the increase in Olmsted County so far as our local society is concerned. We now have a greater membership than ever before; I think our report says there are fifty members, but I think it is over that; some fifty-four or five I think it is. That is a pretty good showing for our county. I believe the society only had ten or twelve members the first year, and not over twelve the second. I suppose we are perhaps raising more fruit in our county than in any other county in the State, unless it may be the county of Wabasha. We think we have the largest orchard in the vicinity of Rochester that you will find anywhere in the State, an orchard that produced about 1,500 bushels of apples last year, and about 1,000 bushels of the Wealthy. I don't see any reason for our being discouraged in regard to fruit culture. I do not wish to take up the time further at present.

Mr. Harris. I don't know as it is necessary to make any motion in reference to these reports appearing in our report, as I presume they will be embodied in our transactions. There were some matters omitted last year.

President Smith. I suppose all these reports should appear; if they have been overlooked in the past it is proper they should appear in future.

Mr. Harris. The members of these local societies are entitled to copies of our transactions. I would state that there is no part of our State that is more promising in horticulture than Olmsted County. It was the birthplace of this society. I don't believe there was another county in the State at the time that could have given the poor little weak thing a birth; but it did it. And it has lived, although it pined along for a number of years. I predict for Olmsted County (unless the climate changes) one of the strongest horticultural societies in the State of Minnesota. I think they will wake up even Hennepin, which is holding weekly meetings, and they may well look to their laurels. I would suggest that their report for last year be published so that the world may see the progress made in a single year.

Mr. Sias. I would say in regard to that report that I handed it in, and there was a motion made to have it go into our transactions, but for some reason it did not appear; I don't know why. I regretted it very much on account of the address of Mr. Harris attached to it. That was perhaps the most important part. If it could be found and brought into the next report I think it would be quite a satisfaction to our society.

On motion of Mr. Smith the secretary was instructed to endeavor to obtain the missing report and to embody the same in the proceedings.

Mr. Dartt. Mr. President, there is a little personal matter between myself and the society that I might as well mention at this time as any other, if I don't kill more than ten minutes. Most of you know that I was a delegate to the meeting of the Iowa society; and the first year I made a report which was to appear in the proceedings. I wrote out my report and forwarded to the secretary and he published a portion of it and retained a portion for the future action of the society. Now, I rather suppose, in justice to myself, the balance of that report should be presented to the society. I have understood that he lost some papers and I don't suppose this would be considered any more valuable than some others and that he might lose it. If the balance of that report can be found and read I shall be glad, but if not I am prepared to furnish a nearly correct copy of it. It is perhaps not very creditable to me to make the report; it might be wise on my part to say nothing about it, but to let it drop. But I wrote the report and am willing to present it and take the consequences. If there is anything in it that is unfit to print I hope you won't have it printed, but whatever blame is attached to me I will stand. I don't want to sneak out of anything—I want to take all the responsibility that belongs to me. I wrote the report in such a way as I deemed beneficial to the society and to the cause of horticulture; it is made up of criticisms partially, and you all know that it don't take a great deal of talent to criticise, and that is the reason I made the report in that way. I will be glad to read the balance of the report at some future time.

Mr. Underwood said he hoped Mr. Dartt would present the balance of the report and have it read. He was entitled to that.

President Smith said a motion to that effect would not be necessary.

Mr. Harris stated that the delegates in attendance at the meeting of the Wisconsin Horticultural Society would be prepared to report at the proper time. He understood that an arrangement was made some two years ago providing for an exchange of reports with the societies in that state and Iowa. He inquired if any present had received such reports.

Mr. Dartt. I think I have received the Iowa report.

President Smith. Personally I should like to have copies of those reports; a great many of our members would like them. Think fifty copies was the number agreed upon.

Mr. Harris. I don't remember the number. The Wisconsin society do not get as many copies from the State as we do, but I think they agreed to send us twenty copies if they could do so.

Mr. Peterson. I received one of them.

Mr. Tuttle. The understanding was that we would exchange reports with Iowa and Minnesota this last year. Our report is embodied in the State Agricultural Society's report and some ten thousand copies of that were printed, being a volume of some eight hundred pages. I suppose, if they have none of the small reports to spare, they could furnish the other which embodies the same report.

Mr. Whipple. I would inquire if anybody knows how many of our reports have been sent out.

President Smith. Our secretary's report does not show the number, and we have nothing here that shows our membership except the printed reports.

Mr. Smith moved that the secretary be requested to ascertain what could be done towards an exchange of reports with other state societies, and to get as many copies for distribution among members as could be obtained consistently.

Mr. Harris. Iowa and Michigan only agreed to send enough to supply the officers and the executive committee. For two years past I have received none from Michigan and none from Iowa only by sending for a copy. Our reports have gone away by the hundreds. I hope some record may be kept of their distribution in future.

President Smith. I ordered one hundred copies from the State printer and fifty of those went to the German Horticultural Society here, and what are left I will bring up.

Mr. Harris. The State Agricultural Society are entitled to one hundred copies, as well as members of the legislature each a copy, but if these are provided it will bankrupt the society of

all our spare reports. We shall have to be a little more careful how they go in future.

The meeting was then adjourned till 9 o'clock A. M., January 21st.

MORNING SESSION.

SECOND DAY, WEDNESDAY, JAN. 21, 1885.

REPORTS OF DELEGATES TO WISCONSIN MEETING.

The meeting was called to order at 9 o'clock, Tuesday morning by President Smith.

Mr. J. S. Harris, of La Crescent, and A. W. Sias, of Rochester, delegates to the Annual Meeting of the Wisconsin State Horticultural Society, were invited to present their report.

Mr. Sias then read the following report:

REPORT OF DELEGATE TO THE WISCONSIN STATE HORTICULTURAL SOCIETY.

BY A. W. SIAS.

Mr. President and Members:

We deem it a high compliment to say of a speaker or writer that he is a man who does his own thinking. But I believe there are times in the experience of every person when it is highly proper, wise, and it conserves the best interests of all the parties concerned to let others do your thinking for you. Your delegate to Madison last February, when he reached the capitol and found both ex-President Harris and Secretary Gibbs there, felt that he was in just the position to take life easy and enjoy himself, and that if he could only manage to keep his mouth shut the Minnesota State Horticultural Society would be ably represented. In this conclusion he was not disappointed. On my way to Madison I made three visits, that were both delightful and instructive, viz.: at O. M. Lord's, Minnesota City, where we find some of the best native plums in the State; J. S. Harris,

La Crescent, where we find one of the oldest orchards in the State, and the one that produced the fruit that carried off the most blue ribbons, and lastly at E. Wilcox & Sons, La Crosse, where we first found Moor's Arctic Plum (and many other good things).

Dr. T. H. Haskins, Newport, Vt., writes me under date of Dec. 24, 1884: "I should think Moore's Arctic would be a bonanza to you. It is a *fact* (why, I don't understand,) that the curculio does not touch the fruit of Moore's Arctic, though they absolutely riddle the red plums alongside. I never saw a single curculio mark on a Moore's Arctic plum, and I eat them by the peck. Still it is so strange, that I should not be surprised to hear that they go for them elsewhere. Yet they say the same as I do of them in Northern Maine where they originated, and in the adjoining province of New Brunswick, where one man (F. P. Sharp, of Woodstock,) shipped 2,000 bushels last year." We reached Madison late in the night, and put up at the Capitol House, where we found first-class accommodations and courteous treatment. After enjoying a well-prepared breakfast we reached the horticultural rooms before the convention was called to order, and enjoyed the pleasure of renewing our acquaintance with the veterans of Wisconsin's pomology, viz.: J. M. Smith, of Green Bay; A. G. Tuttle, of Baraboo; J. C. Plumb, and others. Soon after the convention was called to order by Pres. J. M. Smith, the Minnesota representatives were elected honorary members and invited to take part in the discussions, which they proceeded to do, with the exception perhaps of your "modest member," whose silence was no doubt thought to be grand. At the close of the morning session we were taken in charge by A. G. Tuttle for the balance of our stay in Madison and most royally entertained. The only exception to this was during the afternoon session of the last day of the convention, when Secretary Wm. Trelease invited the Minnesota representatives, Pres. Smith, Hon. M. Anderson, B. S. Hoxsie and others to take tea with him at his private residence in the city. This was an enjoyable occasion. Prof. Trelease and his amiable wife know how to entertain such a party in right royal style. One object is, and of right should be, in sending delegates to other societies to compare notes, and keep up a friendly interchange of practical ideas and business relations. Keeping this in view, and believing, in Minnesota at least, the apple to be the fruit of all fruit for our climate, I could conceive of nothing that I could

do for our State and society, during my short stay among the horticulturists of Wisconsin, better than to make a *special* study of winter apples, and present to you in my report a list of at least half a dozen each of the most promising native and foreign sorts, and in order to make this list as complete and accurate as possible, considering the short time we have any of us had to test some of these new varieties. I have since my return from Madison, corresponded on the subject with such well known practical fruit-growers as Chas. Gibb, of Abbottsford, Pro. Que.; Dr. Haskins and A. Webster of Vermont, F. K. Phoenix and Tuttle of Wisconsin, and Peter M. Gideon of our State. In presenting my list of native sorts, I shall confine myself to what are believed to be Wisconsin seedlings, namely: Wolf River, McMahan White, Giant Swaar, N. W. Greening, and a sweet and sour seedling by A. J. Philips and exhibited before this convention by him two years ago at Minneapolis. These are all large and of good quality, and winter varieties at least north of latitude 44°.

Of the foreign varieties, will say that out of six that we applied to for a list of half a dozen winter sorts, (and they are among the most extensive growers of foreign fruits in this country,) only one ventured a full list; the others run from three down to zero. I will give this full list just as received. It is from A. Webster, of Vermont, and I have no doubt of its correctness for his location, but I venture the prediction that not over one-half the list will prove to be winter here. It is evident from the writings of Dr. Haskins and others that fruit keeps longer in Northern Vermont than with us. Here is Mr. Webster's list of the six best Russians, viz.: Little Seedling, Borsdorf, Longfield, German Calville, Blackwood and Russian Gravenstien. One of my most trusty correspondents on this interesting subject writes: "Your question as to what are the best six Russian apples for Minnesota, I am not able to say. It is 'the difficult question' and I am afraid to venture. It, however, will not be long before we know something about it."

My answers were all highly satisfactory, and show conclusively that we have able, honest workers on this foreign fruit list, and when they *do* give us a winter list for Minnesota it will be neither summer nor fall, nor *too tender*. I'm told that during the night of January 1st, of the present month, spirit thermometers in the lower part of our city indicated 52° below zero. My thoughts at once recurred to my Iron Clad Russians, and my sleep has been

just as sound ever since. On our return from the convention we laid over one day to visit our friend and co-laborer, A. G. Tuttle, of Baraboo, and during our exceedingly pleasant and profitable sojourn, we were instructed by Mr. Tuttle how to wind root grafts without wax, and you may not all be familiar with this mode of winding, which saves time and expense. I will try to explain it here. He tongue-grafted in the usual manner, winding the unwaxed yarn, which is light and sleazy enough to break easy, twice about the base of the union, and then same number of times around the top, then drew the yarn between the cion and top of the root and broke it off. We wound about 20,000 in this way last winter and never had grafts do better.

Apples best adapted to Wisconsin,—revised list,—hardiness, productiveness and quality taken into consideration: Duchess, Wealthy, Pewaukee, Fameuse, Plumb's Cider, Talman Sweet, Wolf River.

Crab apples for general cultivation,—Whitney No. 20. Gibb, Hyslop, Sweet Russet, Transcendent.

The cultivation of small fruits in Wisconsin is so similar to our own that I will not trespass upon your time in considering it.

Evergreens for general cultivation,—Norway Spruce, White Pine, Arbor Vitæ, Scotch Pine, Balsam and White Spruce.

The Wisconsin Horticultural Society was organized a year previous to our own, viz.: in 1865. Let us now compare their three banner counties with a like number of ours, and see how we stand on the most *interesting, profitable* and *vital* subject that can ever properly come before a convention of horticulturalists, viz.: that of *seedlings*:

First—Will name Waupaca County, the home of the Wolf River and other popular varieties.

Second—La Crosse County, the home of our esteemed member A. J. Philips, who showed us such large, fine winter seedlings two years ago at Minneapolis.

Third—Waukesha County, the home of the Pewaukee, and other new seedlings, showing that the *resurrection* of Geo. P. Peffer was no unimportant event in the history of the State.

Banner counties for Minnesota, viz.:

First—Hennepin, the home of the famous Wealthy, and many other noble seedlings.

Second—Olmsted, where the Brett seedlings were born, and first introduced to public notice by myself, at the annual meet-

ing of the Olmsted County Horticultural Society, in December, 1883, and mentioned in my report on seedlings before this society a year ago. Also the Forster seedlings that took the first prize from this society two years ago. And the Waldron seedlings from the Fameuse now on exhibition that I wish to call your attention to at this time.

Third—Wabash County, the best known of which is the Rollins varieties; Rollins Pippin, Elgin Beauty, and many other hardy winter sorts.

In the hasty comparisons here made between the new fruits of Wisconsin and Minnesota, we have no desire to even intimate which State has done the most for the Northwest till we know what effect 54° below zero has on them.

Mr. Harris then read the following report:

WINTER MEETING OF THE STATE HORTICULTURAL SOCIETY OF WISCONSIN.

BY JOHN S. HARRIS.

It was my privilege to receive a special invitation to accompany our mutual friend Mr. Sias, upon his silver wedding tour the first week in February last, and as the thoroughly alive and immensely popular railroad company, the Northwestern, through their genial superintendent, Mr. S. Sanborn, seconded the invitation with free transportation over their road from Winona to Madison and return, and I had learned that Mr. Sias carried letters of introduction to some of the notables, I gladly availed myself of the privilege of being bridesmaid for the occasion, and I assure you I shall never regret doing so. As he has furnished you with a good report of the tour, I had resolved to remain silent upon the subject, but the resolution has been rescinded by a unanimous vote, so I have concluded to write you a letter about it which you need not print unless you want to.

We boarded the east-bound train over the Northwestern at Onolaska, a little burgh about six miles from La Crosse, on the evening of the fourth, and the gentlemanly conductor soon found us and said we were the chaps he was looking for, and he served some very pleasant papers upon us, and offered me the freedom of his castle. Upon looking about we found the coach a very elegant one, and well lighted and warmed, and the road bed

smooth and pleasant to glide over. We reached Madison about midnight, and were so honorably entertained at the Capitol House that we should like to stop there again. We awoke on the morning of the fifth to find the beautiful city of Madison full to running over with live farmers. After breakfast we hied away to the halls of legislation, and there a grand sight awaited us. From four to five hundred farmers and sons of toil had taken possession of the seats so wisely occupied by lawmakers and the political shysters that stick to them—as does the bark louse to our apple trees—as long as there is any blood left that can be drawn. They had come not to engage in a woodchuck hunt, but to discuss the most momentous questions of the day, and to devise means for raising better stock and growing more and better crops, thereby adding to the wealth and prosperity of the State. Was this sacrilege? The representative farmers had gathered in from various parts of the State and temporarily taken possession of their own. All seemed able and willing to impart information and to receive it, too, and for four days the halls of legislation were filled with oratory, and echoed to honest eloquence and appeals of sound sense. They seemed to say

“These are the hands whose sturdy labor brings
The peasants food, the golden pomp of kings;
This is the scholar, whose immortal pen
Spells the first lesson hunger taught to men.”

The State Agricultural Society, the State Horticultural Society, the State Cane Growers, Dairymen and other associations were holding their annual meetings simultaneously. The concentration of so many meetings in one week of societies having kindred interests and being component parts of a great whole, the beautiful temple of agriculture, probably brought together a larger representation of each than either one could have secured had the meetings been held at different dates. All of the meetings except the State Horticultural Society came under the program of the State Agricultural Society, and Secretary Babbitt's long and well arranged order of business gave each a portion of time for bringing out valuable and interesting papers and discussions. Now, I do not believe that Wisconsin is favored with any better farmers, or those who are more capable of arranging and presenting their ideas in a manner calculated to benefit the people and build up agricultural societies than is Minnesota. But these papers and discussions are collected to-

gether and published and substantially bound in the annual transactions of the society, making a volume of great value to those who are fortunate enough to receive them. The legislature of Wisconsin is liberal toward agriculture, and the governor, Mr. Rusk, honored the session with his presence, and in a few well-timed remarks assured the farmers that all they had to do was to make their wishes known and they would be complied with; that Wisconsin being an agricultural state the farmers could select such members to the legislature as they chose, and that no governor would dare to veto any measure that has their indorsement. He seemed to believe that though

“The king may rule o'er land and sea,
The lord may live right royally,
The soldier ride in pomp and pride,
The sailor roam o'er ocean wide,
But this or that, whate'er befall
The farmer, he must feed them all.”

and therefore his rights were the first that should be respected.

The legislature of 1883 authorized the publication at the expense of the State of 12,000 copies of the transactions of the State Agricultural Society, 12,000 of the State Horticultural Society, 12,000 of the State Dairymen's Association, and 12,000 reports of the Agricultural Department of the State University. The whole may aggregate nine hundred and fifty pages. Eleven thousand five hundred volumes of each are to be bound together in cloth, and five hundred copies of each separately for the members as exchanges of individual societies. When will the farmers of Minnesota awake to the importance of their calling, and proceed to demand their honest rights, and brand every legislator with infamy who dares to oppose their receiving a like grant?

Considerable time was spent in discussing the management of the agricultural department of the State University, and there seems to be a growing feeling among the farmers in favor of separating the Agricultural College from the University of the State. The State Horticultural Society has enrolled among its members some of the ablest men of the State—men who are thoroughly awake to the importance of successful fruit growing and rural adornment. In years previous their annual conventions have been held in joint sessions with the Agricultural Society, but this year, through some misunderstanding, their meetings were separate, and they found themselves called together

without a program for the occasion. However, the time was fully and pleasantly occupied with the routine business of the society, sandwiched in with volunteer speeches and congratulations upon the condition and progress of horticulture, and the reports of delegates who had attended the meetings of other societies and the late meeting of the Mississippi Valley Horticultural Society. One evening session was devoted to the discussion of the future of apple culture in the more unfavored regions of the Northwest. Messrs. Gibbs, Sims, Tuttle, Pepper, Plumb, Kelley, and others took an active part in the discussion, and the opinion of the older and best horticulturalists seemed to be that the late tour for observation in Northern Europe by Hon. Charles Gibb, of Canada, and J. L. Budd, of Iowa, would prove a great help in solving the great question, but that in all probability, the varieties brought from Russia would not supply a sufficient number of varieties that would prove adapted to all localities and situations, and that the future tree would yet be originated upon our own soil, either from seeds of the best Russians or our best natives, or an intermarrying between the two. The interesting papers read before the meeting were: "The Cultivation of Chestnuts Above Forty Degrees North Latitude," by A. S. Benedict, of Weyauwega; "Fruit-Growing in Florida," by J. S. Stickney, of Wauwatosa; "Russian Apples," by A. G. Tuttle, of Baraboo; "Blight on Apple Trees," by George P. Pepper; and "The Flower Mission," by Mrs. H. M. Lewis, of Madison. The latter was a very interesting paper, showing the workings of the most beautiful of all charities in the distribution of flowers to the inmates of hospitals, charitable institutions, the sick and poor in their homes, and the inmates of jails and reformatory institutions. The society receives but six hundred dollars per annum aid from the State, and the working members are scattered over a wide extent of country, making it much more costly than with us, to defray the expenses of summer meetings, which they locate in parts of the State where they may accomplish the most good, and they expend much larger sums than we do in payment of premiums for the exhibition of horticultural products. The election of officers resulted in the choice of J. M. Smith, of Green Bay, for president, and Mrs. H. M. Lewis, of Madison, for Secretary.

After the adjournment of the Horticultural Society, we accepted an invitation from Mr. A. G. Tuttle to spend a day in looking over and examining the apple trees in his extensive

orchards and nurseries near the beautiful city of Baraboo. Mr. Tuttle's place is the headquarters for Russian apples in the Northwest, he having been the first to get a start in those hardy varieties, through the Hon. C. M. Clay, when he was United States consul at St. Petersburg, Russia. Mr. Tuttle has about one hundred varieties, two trees of each set in orchard, of which about fifty have fruited. A few of them he considers very fine, and thinks that after further trial we may reasonably hope to be able to select from them a half dozen or more varieties that will prove of great value for planting in trying localities. The trees of most of the varieties exhibit marks of great hardiness and adaptability for this climate, and it may be well for us to keep a watch of their conduct in the future.

We had a good time, and our thanks are due to President Smith and the old war horses of the Horticultural Society for making our stay in Madison so pleasant; also to President Fratt and Secretary Babbitt of the Agricultural Society, and Profs. Henry and Trelease, of the State University, for their many courtesies shown us.

DISCUSSION OF REPORTS.

President Smith. You have heard the reports read; are there any remarks to be made upon them? They will be received and published with our proceedings unless otherwise ordered.

Mr. Harris. I would like to state that the snow was pretty deep at the time we were at Mr. Tuttle's place and it was rather difficult getting around in his orchard. Mr. Tuttle is not a very tall man but he managed to break the snow down pretty well. We examined his trees and I must say that the majority of them do look remarkably well. He took a hatchet with him but showed good will towards us. Whenever there was any variety that he wanted to find out if it had been injured why down came a tree. He was cutting them so savagely that we almost felt like asking him to forbear, and we were satisfied to take a few specimens. The trees that he cut we generally found sound in the heart. I found one which I examined more carefully after getting home which I thought showed marks of injury; I thought by the appearance, by the winter before or blight,—I think it was the blight. I have no doubt there are many varieties valuable to plant in trying situations, but I think there is scarcely any variety we can find that comes from Russia that will be per-

fectly adapted to planting everywhere. A tree that might do well in a narrow valley might do nothing on the prairie. Another variety that in one locality might produce fine fruit might on the prairie be worthless. We must not jump at conclusions in this thing and we should not urge every farmer to go and purchase all those varieties, but we must experiment and we should give information as soon as we get it. They can help us in solving the question and help us to find something that will be of value to all our people. Perhaps we cannot find enough of them. The Duchess has stood by us. If we cannot do this we want to do another thing which is the planting of seed. I have had occasion to notice this of late: Many people come to my place and I frequently give away nice looking apples; I find people will eat a good apple, save the seed, carry them home and I suppose they plant them. Now, if every man who eats a Minnesota apple which is comparatively hardy, will take care of the seed and plant them, the time is not very far away when some one will hit upon something which may perhaps be better than the Wealthy. If not he will hit upon something of value. There are places where the Wealthy blights and the time is not far off when we shall get much good from the planting of seed and raising trees from them.

Mr. Smith. Mr. President, in relation to those seedlings mentioned here, I have a suggestion to make. I don't know that it is practical, but I think we ought to make some arrangement by which we could bring this matter more directly before the people of this State; so I put this out in this way, and it can be modified, changed or rejected. I move the appointment of a committee of three to collect all the information possible in regard to the best Minnesota seedlings, with a statement of where the varieties are for sale and at what price; that 10,000 copies of a circular containing this information be printed and scattered throughout the State, wherever it is thought they will do the most good; that the press of the Northwest be requested to give this as wide a circulation as possible, and that the expense to the society shall not exceed \$50. My reasons for this are, first, that the Rollins Pippin has been before the people of Minnesota for a good many years, and very few people are planting it, and yet I believe it to be worthy of cultivation anywhere in Minnesota; the same may be said in regard to many Minnesota seedlings of merit. They have not been brought before the people. Now, the nurserymen are, perhaps, propagating them on a small scale,

but they do not push their trees on the public, consequently the trees are not sold.

Again, there are men canvassing all over the State with something that they represent as being a new seedling; sometimes it is good for something, but generally it is good for nothing, and usually the farmers who buy and pay out their money are disgusted with that sort of work and do not want to buy any more. Now, then, if we can get some information that is reliable, and attach the names of reliable men to the statements sent out (and we have got them) that they have such stock for sale, the people will know where to buy; they will know that they are getting a good article, and I think that something in this direction might be done that would stimulate the planting of fruit trees in this State very much.

Mr. Dartt. Mr. President, in order that too much time may not be consumed I would move that in all discussions persons be confined to five minutes time, and to one speech upon a question until all have spoken who wish, and two speeches be allowed by consent of the society.

Mr. Pearce. I think that is a standing rule in this society.

The President. No; I think it is not.

The motion of Mr. Dartt was seconded and adopted.

The motion of Mr. Smith was seconded.

Mr. Dartt. This question of satisfying the people as to what is reliable for them to plant is in my opinion a very important one. If we could say to the people all over the State everywhere, there are varieties of standard apples that you can grow successfully, and say it with truth, it would be worth a great deal to the people. The trouble is we have said so much to the people, we have told them so many things that they could do that they have tried to do and failed, that they are inclined to believe either that we don't mean what we say or else that we don't know what we say. Now, then, our list of apples — take the whole list that we are growing in Minnesota — there is not in my opinion three apples well known that can be grown in the unfavorable sections of this State. I think there is a large number that can be grown successfully in the favorable sections; they can be grown up and down the Mississippi Valley, at Excelsior and in this favorable region, but when you go back where the general lay of the country is about four or five hundred feet higher than it is here, with no water to soften the atmosphere, we find a failure. I cannot grow the Wealthy successfully. I

don't believe it can be grown successfully in Steele County; many have tried it there and failed, and the same is true of nearly all these varieties that you grow in the Mississippi Valley. And so it has been with nearly all the Wisconsin varieties; I have tried lots of them. I was there and staid a good while, and I have tried the hardiest I could find, but "death was their portion." They couldn't stand Minnesota. I expect we shall probably get something out of these Russians, something that will stand. What I desire is that the State shall be districted according to its fruit-producing abilities into districts; those districts favorably located—let those sections be by themselves, and the others by themselves. I would like to see the Iowa plan of directors adopted and have one director for each section, that director to have the oversight of his territory, and he be expected to report everything good, and as far as necessary, everything bad.

Mr. Underwood. Mr. President, there is already provided, I think, by the articles of our society something that answers that purpose; I don't know but it enters into the constitution—a provision for a seedling fruit committee. Perhaps it would not be necessary to have two seedling committees, but if it is thought best to give the committee any special work to do to more accurately define what their work shall be, it seems to me that might be done and let that answer. I think, so far, the seedling committee have simply been chosen and allowed to go on without any instructions at all, and they have not accomplished as much perhaps as they might have done if working under instructions. I suggest that it is not necessary to have two seedling committees.

Mr. Pearce. At our last meeting this question was discussed pretty thoroughly, and some of our friends are apt to forget some things. There are now experimental stations located all over the State for the purpose of making tests of fruit, and I think I have one hundred varieties. It rather strikes me that seedlings are looked up more closely in this State than in other states. All we have to do is to see that the committee on seedlings do their duty. And I know that they are trying to do it; I know that there have been seedlings sent to every station so far as it could be done. I know I have had seedlings until I have got tired of them. So far as the necessity of having this matter looked up, I must say that I think it is being very thoroughly done. There is my friend Sias who is making good progress,

and here is Mr. Underwood. Not only the experimental stations are used, but there are orchardists all over the country who are at it, and I venture to say that within three years we can purchase five hundred new seedlings without any effort at all. If any better means can be devised I would like to see it introduced. I am opposed to committees because they sometimes clash together. We have seedling committees and they are to make a report here.

Mr. Sias. Before the discussion on seedlings, would it not be well to call for the report of the Seedling Committee?

Mr. Smith. With the consent of the second I will withdraw that part of my motion that a committee be appointed on seedlings and move instead that the Seedling Committee be instructed, etc.

Mr. Shannon. I think there are perhaps others like myself who live out in the western part of the State and are not very thoroughly informed as to these new varieties. It seems to me this information in regard to seedlings ought to be very widely distributed. In the country where I live I think I am visited by about every fruit man that comes through the country; and I find that no two men sell the same trees. They all make a specialty of something and generally the speciality amounts to nothing. If information could be sent out on which the people could rely it seems to me it would be of great benefit. They will buy everything that comes along when they see the cut of the fruit, not knowing what they are buying, and as a rule it amounts to nothing.

Mr. Harris. We established a standing committee on seedling fruits either in '80 or '81; and the next year there was some discussion on the subject and a vote taken by the society that it should be the duty of the Seedling Committee, when they heard of anything that would apparently be promising, to go out and examine and report upon it, their actual expenses in going and coming to be paid by the society, and we should act on such information. I think it was designated what territory we should go over; and that was the arrangement for two years; I think it will be found in the report of our transactions. I believe some members of the Seedling Committee are present and are ready to report if called upon.

President Smith. Perhaps we had better hear their report before taking definite action.

Pending the report of the Seedling Committee the resolution was laid on the table.

On motion of Mr. Smith the report of the committee was called for.

REPORT OF SEEDLING COMMITTEE.

Mr. Underwood. Mr. President, I have no prepared written report. Of course we are doing all we can and doing a good deal to develop new seedlings, which we hope will result in good to the people of the State of Minnesota; but it is impossible in one year, two, three, or more years to bring out any new variety and be prepared to recommend it and say that it is hardy, a good and desirable apple in every respect, and one that we can recommend the society to adopt. I have a seedling on exhibition here that is growing in the southern part of the State which has been brought to the notice of the society several times; and while we have been following it up to see what it is doing, at the same time we don't feel justified in saying it is one of the desirable seedlings that the society should recommend. And there are very many of these experiments that must necessarily take time; the society cannot expect that the Seedling Committee are to take the cions they have received and send them out labeled as hardy, good keepers and all that is desirable. I think very likely all the other members of the committee have met with the same experience, if they have been able to develop anything really reliable and of value. Just as fast as we get information that is reliable we are ready to report. I have no doubt you will trust a nurseryman to let it be known when he finds anything that is worthy of notice to announce the fact, and he will be very likely to post our friends in other parts of the State and try to sell them some of the trees. I have a great deal of faith in the results that will accrue to the State in the development of new seedlings. We are continually being importuned to take up new seedlings that perhaps some man has on his farm and which he says is just as hardy as an oak, is a splendid keeper and the best apple he ever eat; but under our management they don't always turn out just what they have been represented to us. And when we go to visit the trees sometimes we find they are an old variety that has been grafted for many years. It seems to me it will be several years yet before, as experimental stations, we shall be able to give to you anything that is thoroughly

reliable. We certainly have already enough that may be considered a good deal of an experiment which we don't know very much about. I could talk to you for perhaps half a day about the things that I don't know anything about but that is not the information you are seeking. We have a good many of these new seedlings, top-worked and root-grafted, also Russian varieties, and just as fast as we can develop them and bring them before the society we shall be very glad to do so.

Mr. Pearce. I am a member of that committee. I have no written report to make; but I would state that I procured cions from different parts of the State. I received a good many from our secretary, Mr. Gibbs, that he sent me. I grafted those. I also received a number of varieties from northern Nebraska, that originated there. There is one large, sweet apple—I think it is called the Longnecker; from the growth made last season, and the condition of the wood early in the fall, so perfectly ripened up, I am rather inclined to think it is going to prove hardy. Also received another, a winter variety and a Western apple, resembling the Ben Davis—full as large—known as the Eureka Imperial. At the Kansas exhibition it was the finest apple there, probably, out of two or three hundred varieties. I was so much pleased with the apple that I procured cions enough to graft two or three hundred roots. They have made a beautiful growth. They don't ripen so well as the other. I didn't put the cions out until late, and I cannot say about that. I also received an apple from northern Ohio; one that is cracked up there. I have not the name with me. It also ripened splendidly. I got a lot of those and grafted them. I have also received different Russian varieties; some ten or a dozen; supposed to be the very best. I top-worked and root-grafted them, and they have also done well. Also have a number of other varieties, that I really don't know what their names are. They were sent me from different parts of the State, promiscuously. Half of them came without names. They are doing well. We cannot tell anything about them until another year. There is a seedling that is growing on my grounds that I think is going to be a good early apple. It was supposed to be a Duchess. It looked like the Duchess; but last season it fruited, and it was quite a different thing altogether. It is a nice apple; red, medium-sized and exceedingly early—at least two weeks earlier than the Duchess. I brought a few of them here to the fair, and they were such a nice tasting apple they were soon "gobbled up," and I saw no more of them. But

they were pronounced to be excellent. The tree, I think, is perfectly hardy. It looks like the Duchess, but ripens sooner. Col. Stevens saw it, and was much pleased with it. I procured cions enough from the tree, which is about eight years old, to put out a thousand more. I cannot report more fully. I shall take good care of all these seedlings, every one. I shall send specimens of fruit to those who are judges, and will give the trees a fair test. I had about a barrel of these apples, but the boys got ahead of me this year. They didn't know, I think, that I knew anything about the tree. Another year, if I can possibly save them, I will send those apples around. Am in hopes it will prove to be a good early apple, that will come right in at the time we want it. I shall notice those varieties closely, each one. I will report and exhibit the fruit as they come in bearing.

Mr. Sias, being called upon, presented a report upon a blank form, as follows :

REPORT FROM ROCHESTER DISTRICT.

To the Managers of Seedling Experimental Stations:
GENTLEMEN—In order to conduct our experiments and report them in a uniform manner to the Society, the following blank is adopted, upon which you are to make reports at each annual meeting:

NAME OR NUMBER.	Year Got.	No. clones or buds received.	No. Got.	Stock Used.	Location.	Soil.	Growth.	Quality.	Color.	Season.	REMARKS.
240—Lieby	1884	2	4	Hybrid.....	High N. Slope..	Clay Loam.	Strong.	.....	Striped	Fall.	Clons set in spring of '84. Have fruited 240 for past 6 yrs. Qual. 2d or 3d rate. Have Hibernial ten yrs. old on Hialop crab; no fruit yet.
262—Charlamoff	1884	1	3	" .....	" .....	" .....	" .....	.....	.....	.....	"A failure on sour stocks," says Chas. Ludlum; "and we have no sweetcherries in this locality."
378—Hibernial.....	1884	2	5	Russian	"	"	Fair.....	.....	.....	.....	
472—Ostrekoft's Glass.....	1884	2	4	Seedling .....	" .....	" .....	" .....	.....	.....	.....	
Cherry—Ostheim	1884	5	14	May Duke and Bird Cherry ..	"	"	Dead ..	.....	.....	.....	
Red Plum	1884	4	12	Wild Plum.....	" .....	" .....	" .....	.....	.....	.....	
Wright's Sweet	1884	4	10	Hybrid.....	"	"	Mod'te ..	.....	.....	.....	
Wright's Belleflower	1884	4	10	" .....	" .....	" .....	" .....	.....	.....	.....	
German Rambo.....	1884	4	11	"	"	"	Fair.....	.....	.....	.....	
Robinson's Seedling	1884	4	10	" .....	" .....	" .....	" .....	.....	.....	.....	
Reinbecker	1884	4	12	" .....	" .....	" .....	" .....	.....	.....	.....	
Hart Seedling—Sp'ng of	1884	24	75	" four sorts	"	"	Heavy ..	Good.	Red & Yellow.	.....	Five of these clons bloomed same season grafted.
Longfield	1884	12	36	"	"	"	Mod'te ..	.....	.....	.....	Of E. W. Daniels, at Madison, last Feb.
N. W. Greening.....	1884	6	18	" .....	" .....	" .....	" .....	.....	.....	.....	

About fifty varieties were put on trial last spring, including Pears Eastern Belle and Clapp's Favorite.

ROCHESTER, Minn., Jan. 17, 1885.

A. W. S. I. A. S.

Mr. Sias made the following written report:

REPORT OF SEEDLING FRUIT COMMITTEE.

ROCHESTER DISTRICT.

I shall speak first of what now appears to be one of the most promising new seedlings in the State, viz., the Brett Seedlings of Dover, Olmsted County. These seedlings were first exhibited at the Southern Minnesota fair in September last, and took two first premiums. Next at the State fair at Owatonna, where they were entered as the best collection of seedlings, and took the first premium of ten dollars. Here they had a large display of fine seedlings to compete with. Mr. J. W. Hart, the present owner of these seedlings, has made arrangements with me to propagate them and to enter them for the prize of \$1,000 in his name. Will say that I made a visit to these trees for the first time in December, 1883, and again in August, 1884, at which time three of them were well loaded with fruit. I next visited them in September last in company with J. S. Harris. These trees all appear very hardy and of good quality. I took plates of each and sent them to Minneapolis to be put in cold storage till time to ship to New Orleans; also a plate of each for our exhibit here, but after carrying them twenty miles in a wagon, and then keeping them in a damp, mouldy cellar till this time, I find them now in poor condition to exhibit. But we have a specimen of the wood and leaf here that will doubtless prove satisfactory to all. The originator of these fine seedlings and his noble wife celebrated their golden wedding about a year ago, and will very soon pass over the River. But these hardy fruits will doubtless be continued through their cions for hundreds of years to perpetuate their memory. One is named Hart, in honor of the owner; one May, in honor of Mrs. Mary Brett, who planted the seed; the other Brett. We have still another that we think especially fine and probably the largest, but as this did not bear the past season we concluded to wait for further developments before describing. I have a letter here that I desire to go into this report, by Mr. C. H. Brett himself, describing these fruits, that I will read if you so wish.

“STRONG, MAINE, Feb. 28, 1884.

“Your letter to me in regard to the history of the seedling apple trees on my old farm in Dover was sent to me at this place the last of January, too late for your report.

"In the winter of 1872, I bought a barrel of apples of Mr. Harroon, south of Dover; you may know where he lived; he had a large orchard of good fruit. The barrel I had was the Talman Sweets and Gray Russets, mixed. My wife saved quite a quantity of the seeds, planted them in a box of earth and in the spring of 1873 I transplanted the pips in the best of earth; most of them did not survive the rigors of the cold winters, but four trees came out all right. One bore fine apples the seventh year, none since. The best one had blossoms the eighth year, bore a few apples the ninth; in 1882 bore one and one half bushels of as handsome apples as I ever saw, very large, red, shaped like the Harvey, flat at the poles, not too much so. One other bore the same year one pail full, good sized, longer, color like the Rhode Island Greening. The best tree in full bearing was the admiration of all that saw it, and there were many called to see the sight. The fruit is flavored like the Baldwin; it is not a winter apple but late fall. Everyone that saw it wanted grafts from it. Had I kept the farm should have used the grafts extensively. I do not know what the fruit was last year; Mr. Hart will inform you.

"The apple I call 'Brett's Seedling' (mark this,) never showed the least suffering from any winter since it was a pip; examine the body and you will see the bark is the right color, perfectly clean.

Yours truly,

C. H. BRETT."

The Waldron seedlings originated in the town of Cascade four miles west of Rochester by Robert Waldron, who died the present month, aged about seventy-five years. I visited him about the first of October; his seedling trees were then well loaded with fruit. He helped me put up a good show for New Orleans and for this meeting. I have never grafted any of these seedlings (from the Fameuse), but believe them worthy of trial. The Forster seedlings that took the first premium at our winter meeting two years ago should claim a share of our attention. Mr. M. W. Cook showed me the fruit and wood of a seedling that he says originated in the township of Rochester and bore very heavily the past season. I should have been glad to have visited this tree so as to give a more full report, but just the particular location of this wonderful seedling is at present a profound secret. But among the older seedlings of this section of country I find nothing for winter that suits me much better for quality, or much

more of an Iron Clad than the Rollins Pippin. The Giant Swaar is generally supposed to be a seedling of Olmsted County, but I am sorry to say it is not. It was brought into this county when it was a yearling from Wisconsin, and first fruited by John R. Williams of Viola township. The last of these hard working pioneer seedling growers will soon disappear, but they will be kindly remembered by succeeding generations, who follow to enjoy their fruits. But I must say in justice to our friend Peter M. Gideon that, after all that has been said, it remains a mooted question whether, all things considered, there is anything to successfully compete with the seedlings of Hennepin County.

A. W. SIAS.

Mr. Sias stated, in regard to the Brett seedling, that the variety stands upon the recommendation of the originator, Mr. C. H. Brett, of Mankato, who has no personal interest in the matter at all, having sold the place where they were originated some two years ago. He said he did not wish to recommend them himself at present.

Mr. Sias. I will say that Mr. Brett is getting to be pretty old and does not write a very plain hand. I would say, also, that I am acquainted with Mr. Harroon, whose farm is south of the village of Dover, and think I sold him the trees that bore the apples that Mr. Brett bought. It is called the Gray Russet, but I think it must have been the Golden Russet. It resembles the Gray Russet very closely. His Russets are mostly the Golden Russet. In regard to the Waldron seedling, I would say that Mr. Waldron, who originated it, died during the present month, aged about seventy-five years. I visited Mr. Waldron about the first of last October, and at that time his seedling trees were still loaded with fruit. He helped me to get a good show of fruit for the exhibit at New Orleans and for this meeting. He stated that he thought the seedlings were from the Fameuse. The Forster seedling should claim a share of our attention.

Mr. A. Peterson, of Waconia. I had not intended to report, but will make a short report as my friend from Carver County has done so. There is a seedling in that county which promises well. I have not seen the tree for two years, but I heard last fall that it was as sound as ever, and the fruit three years ago kept until March; it is not extra quality and is of medium size. There is another seedling and a sample was brought here of the fruit; but I don't believe the tree is hardy enough for our climate up there. That is all that I could say about seedlings.

Mr. Harris. Mr. President, these reports have come from members of the seedling committee as well as from our experimental stations. We are so young in the business that I fear we cannot give you anything in the line of a written report that will be very valuable. As manager of a station I have done what I could. I have received a very few seedlings and put them in, and am making preparations so that I can make actual tests of any new seedling or variety that shall be sent me. I have set aside a piece of ground and intend to devote it exclusively to experimental work for the benefit of the Horticultural Society. We did not expect when this committee was appointed that we could go out in one year and gather up those seedlings which should be adapted to the wants of the whole country, but we did hope to be able to originate varieties and bring the information we are seeking before the people much quicker than if the matter was left to itself. I believe that committee has made a report each year. My report is as follows:

REPORT OF JOHN S. HARRIS, MEMBER OF SEEDLING
FRUIT COMMITTEE.

LA CRESCENT, Jan. 1, 1885.

To the President and Members of the Minnesota State Horticultural Society:

I have continued my observations in the line of horticulture and held myself in readiness to respond to every call to visit new seedlings, wherever the attending expense was not greater than the reduced condition of the society would warrant, and have met with encouraging success in finding varieties that promise to be worthy of looking after. At the State fair and at the fair of the Southern Minnesota Fair Association the exhibit of seedlings was much larger and finer than ever before made in the State and fully one hundred varieties were upon the exhibition tables. Many of them were fair in appearance and of excellent quality. The most notable exhibits at the State fair were J. W. Hart's, of Dover Center, three varieties of Brett's seedlings that were awarded the first premium as best collection; Jacob Kline, Union, Houston County, eighteen varieties, awarded second premium on collection and one of them the first as best autumn variety for all purposes; J. C. Kramer, La Crescent, five or six varieties; E. B. Jorden, Rochester, ten or a dozen; J. S. Harris & Son about the same, and many others with from one to ten

varieties. The three varieties of Mr. Hart that carried off the first prize impressed me so favorably that I secured the company of A. W. Sias to pay them a special visit and give the trees a personal examination. We judged the trees to be about fourteen years old and they were apparently sound and thrifty. Tree No. 1 is a strong symmetrical grower with round, perfect top. The fruit, of which there was several bushels, was large, showy and good. I judged it to be an autumn variety. Tree No. 2 branches more upright. Fruit large, medium quality, in my estimation better than No. 1; was carrying a good crop. No 3, fruit mostly gone and will not hazard an opinion on its merits. The ground color of all was deep green, striped or splashed with red and they doubtless are from the seed of one variety. I also visited some trees at Minnesota City. Jas. Wright's seedling, Belle Flower, was carrying a large crop and I believe the tree to be as healthy as any crab of its age (thirty-two years) in the State. The most extensive collection of seedlings I have found anywhere was on the farm of Mr. Burley, one and one-half miles above Minnesota City. I did not have an opportunity to test any of them or learn their history as Mr. Burley was away at the time of my call. There can hardly help but be something good among so many and I call your attention to them that they may be looked after in the future. I have called to examine the tree of Philip Eberhard, of Mound Prairie. It is reported to be twenty-eight years old, a regular annual bearer of a medium sized winter fruit that is a favorite with the family for cooking. Tree sound and thrifty. Also paid a visit to the trees upon the Geo. Hartman farm of Hokah. Found one tree, which I have mentioned in former reports, carrying a heavy crop of fruit and looking well. I have procured and planted the seeds from one-half bushel of the apples for use in my experimental station. I have examined several other trees in various localities and have received information of others that are spoken well of in their respective neighborhoods and shall arrange to see them at an early day. I consider the Seedling Fruit Committee to be a most important one and would recommend that this meeting set apart a certain sum of money to be expended in defraying its expenses or that it fix a limit to the annual expense that each member may incur in the discharge of duty. All of which is respectfully submitted.

President Smith. That completes the reports of the seedling committee. There is another report to be made here upon Russian varieties.

Mr. Underwood. Mr. President, with your permission I will supplement what I said in my report, which was not a written one, with a statement in regard to the seedling I mentioned. Now, I never like to talk very much about what the possibilities of life are; in fact, I don't have any time to look into the future; I don't care anything about the past, and I have very hard work to take care of the present.

Now, there is a seedling we are growing. Our friends are calling on the seedling committee to report, and want something practical, and they want us to tell them all about what to send out. I don't know of anything more that I can do after we have sent agents around to tell them what to do, and when we pay those agents a good salary to tell the people what to do I don't know why they should expect so much more of us. After all, I would just like to call attention to this seedling. I don't know whether it is worth anything, but you can see the fruit. I know this, that in the orchard where it grows it is on a southern exposure and a lot of seedling trees have been growing there in the grass for many years without any care at all. I thought that perhaps out of fifteen or twenty different seedlings we might find something of value; but I would say we have no trees or cions to sell. We have distributed the cions over the State wherever we could place them for testing, and I may say that I have nothing to make out of it at all. I have nothing to sell. I thought a splendid thing for Minnesota would be the variety known as Scott's Winter. We have been growing it for some time and, as you see, it is a nice looking apple. It does not rival the Wealthy for beauty, but I think it is a little better in quality.

Mr. Sias. Has that seedling you speak of been named?

Mr. Underwood. That seedling, no, sir. It is a good looking apple, and when we come to give it cultivation I think it will improve it. The tree looks strong and healthy, growing in the sod. I don't know what it will do under good treatment and good culture.

Mr. Sias. How long have you kept it?

Mr. Underwood. Well, last spring we kept some of them along in the middle of March; but I cannot say if a man had a thousand bushels of them growing in an orchard that it would be a good keeper. You can't tell by the samples you pick off

a tree and take care of—you cannot tell by that that it will be a good keeper. It is a tart apple and resembles the Scott's Winter. I have been struck with the similarity, still they are dissimilar. It grows on a rented place about eighteen miles from Lake City, without any care. I have tried to get some history of these seedlings. The man who originally planted them just planted some seed and set out an orchard. As it is unlike anything I know of, I take it for granted it is a seedling. Everything indicates it is a seedling orchard. I think, perhaps, it would pay everyone to try the Scott's Winter.

Mr. Sias. I have that and it is doing well. My trees are hardy.

Mr. Harris. I have just heard of another seedling of which I made a diagram and sent a man to get a specimen. The tree is said to be twenty-eight years old, and the man who has it raises and sells a good many barrels of fruit from it every year. He says it keeps all winter. I had a couple of the apples but they were not in season at the time I got them; but I should think they would keep pretty well. The man brought in two wagon loads of the apples and sold them in the town of Hokah for winter apples. It is an apple which closely resembles the Tallow, or Golden Pippin. I intend to visit the tree and if it has an outward appearance of being hardy at that age, I shall try to procure scions this spring. I will make further report on it next year.

Mr. Smith. Mr. President, I found a seedling last fall that I thought was pretty nice and I had the promise of some of the fruit for exhibition, but the gentleman has not got around. I want to tell you a little about the apple to show that we have an abundance to draw from. The party described this tree to me as a seedling growing on the open prairie, that has been fruiting for the last eight years. The tree has never killed a bit, is hardy and smooth, the bark is light colored but very firm,—no cracking, shelling or blistering; the limbs start out like those of the Hyslop crab, so there is no danger of splitting down. I might say that Mr. Harris, myself and somebody else were a committee to report on some apples that were on exhibition in which we had some thirty or more seedlings, among them the Brett seedling, and some others that we thought were very fine, but as a matter of fact on all points we were compelled to give the preference to that apple. It is an apple a little larger than this specimen I have here, yellowish white, conical in shape, flesh

white,—very much like Mr. Gideon's Excelsior; but it is of fine flavor. We will endeavor to have this seedling on exhibition another year. We will have a sample of the wood and a history of the tree as near as we can get it. On the twentieth of September the apple was still quite hard; it is evidently a late keeping apple and is of fine quality. I have tasted the Brett seedling and consider it very fine. One thing that struck me very favorably was the fact that it bore in about seven years from the seed, an evidence that it is an early bearer. I think we are on the right track for success in propagating from Minnesota fruit. I think this Brett seedling has something of the characteristics, both in the tree and the fruit, of the parent tree, it being supposed to have been from either the Talman Sweet or Golden Russet. Take the longest keeper of the Brett seedlings and you will find the skin very much like the Golden Russet, and I have no doubt it will be very much liked. I believe one of them is marked down the side the same way the Talman Sweet always is. The Brett seedling is valuable stock to propagate from.

Mr. Sias. I like Mr. Smith's remarks on seedlings, but I would like to say just a word about the Brett seedling that we had in competition with some others. Those same samples, after being carried twenty miles on a wagon to the Southern Minnesota fair and exhibited there for two weeks, were taken to the State fair, and were handled by everybody, and still they took the first premium as the best collection of seedlings. We did not intend to place them in competition with anything after that as they were too nearly used up; but I boxed them up and sent them with some other things to my friend Pearce. We sent them because we had no other samples, and not to be placed in competition with anything else. We hadn't time to get new samples. The original tree had about two bushels of fruit. The tree must be some eleven or twelve years old.

Mr. Elliot. Mr. President, I have a sample of a seedling raised by George Woolsey, of Minneapolis township, raised from seed of the Wealthy. Mr. Woolsey is away this winter and he left these specimens with Mr. Gilpatrick to be brought to this meeting. These seedlings bore fruit five years from the planting. The tree itself seems to be as hardy as the oak. They are situated where they get the heat of summer and the cold blasts of winter. The tendency to bearing early shows the same propensity as the Wealthy. What the quality is I cannot say. I merely bring

this to your attention so as to bring them before the society. I would say in regard to this matter of finding something adapted to our State I think is the point we should seek after. We have got to reach out for hardy varieties of apples for this northern climate and we have got to look to our seedlings; not only to our present seedlings but to those of future generations. It is by this process of acclimatization that we are going to derive the benefits of northern fruitage; by taking all the desirable seedlings that we can gather up from the different stations I think it is very evident that we will get the benefit. Out of the thousands and hundreds of thousands of seedlings that have been started in this State we have but very few of what we may call "iron clads," but each year is bringing new favorites to our attention and I think the time is not far distant when we shall receive accessions to the number that will give us something that will be worthy of propagation.

Mr. Tuttle. I wish to say a few words on this seedling question. I wish here to acknowledge, on the part of Wisconsin, that your work in this direction has been far ahead of ours, especially in its results. I look upon the Wealthy apple, originated in your State, as being of more value to Wisconsin, as a market apple, or for general use, than all the American apples put together. I have been growing seedlings from Wealthy and Tetofsky and have several hundreds of them. I don't know of anything that has been thoroughly tested that is reliable for us to plant for general cultivation. We have the Pewaukee and I have seen the original tree which for the past twenty years has borne good crops. I had great faith in the Pewaukee and planted it in my own orchard until the year before last winter, and I thought it was just the tree for us; the trees were perfectly sound and some of the trees bore very heavy crops. But I find that they are failing where most of our seedlings fail, even after years of trial; when they come to a hard winter, after bearing a heavy crop and exhausting the vitality of the tree, they fail; and I fear we shall find this to be so with many of them. It is well in testing these new seedlings, where they are to be disseminated, that they should have a thorough trial and for a long period.

I have been looking to the new apples from Russia to supply the necessities for fruit for apples in this Northwestern country, but I think that this work in the seedlings is a thing that should be carried on both by our State and yours; I have no doubt you

will find some seedlings that perhaps are more hardy than the Wealthy. But it is good enough for us; in fair locations it is all right. The Wealthy for its quality, for its keeping, for its early bearing and hardiness of tree,—I do not know of anything among American apples that will compare with it. We are grafting the Wealthy pretty extensively this winter. I want to say a word in regard to a seedling that has been receiving some attention with us, known as the Northwestern Greening, of Wisconsin. At the December meeting at Green Bay, the evidence was that the old tree bore two crops and died, root and branch, and still it is being propagated, and I know by some persons is considered a hardy tree. Now it will be perfectly safe at least to try it still further for awhile.

Col. Stevens. Mr. Tuttle, how is the Wolf River?

Mr. Tuttle. I see no reason why that is not a hardy apple. We have several varieties.

Mr. Pearce. Is the Wolf River seedling considered as good in quality as the Wealthy?

Mr. Tuttle. No, sir; it is more like the Alexander. In fact it is so near it that the apples which we exhibited at our winter meeting, where they were placed by the side of the Alexander, were so near alike that it was hard to tell which was which, and persons who did not know couldn't tell the difference. And Mr. Pepper, a gentleman of the committee, pronounced it the Alexander. But the apples I have seen since do not resemble the Alexander as much, but I think quite likely it is a seedling of the Alexander.

Mr. Sias. Is the Wolf River as hardy as the Wealthy?

Mr. Tuttle. Well, sir, I could not say; but I think it is.

Mr. Harris. I have no doubt that the Wolf River, if a seedling, is from the Alexander. The habit and growth of the trees on Mr. Phillips' place are so nearly alike that I couldn't tell them apart. Mr. Phillips thought he could see a difference; I could not. The tree blights just as bad as the Alexander, and that is the great fault; the Alexander is not as sound in Minnesota as the Wealthy.

Mr. Harris. Mr. President, we have established a precedent in the State Horticultural Society of electing to life membership men who have done life service in the society and accomplished as it were the work of "old warhorses," who have done work for the Northwest and distinguished services, and I rise at this time for the purpose of moving that we make one who is present a life mem-

ber of this society; I refer to Mr. A. G. Tuttle, who is one of the old pioneers of the Northwest in fruit culture; he has spent a lifetime in developing and trying to solve this great problem which so interests us here; and we could pay no greater compliment to the Wisconsin State Horticultural Society, of which he is an honored member, than to thus recognize his work. I therefore move you now that we make Mr. Tuttle a life member of this society and confer upon him every privilege which we ourselves enjoy.

The motion was unanimously adopted.

Mr. Dartt. Mr. President, in regard to these seedlings, I think there is one point in favor of the bleak, exposed places in Minnesota as places of experiment. Now we have away out on the prairies, we have in Steele County, several seedling apples recommended to have stood for many years and borne choice fruit. Now, if the members of this society can go into such unfavorable localities and get good apples there will be one point that they will have secured and that is hardiness. You may get apples along the Mississippi, you may get them in Wisconsin, find them all right in every respect, but you are not certain about their hardiness; then you have to go to work to test their hardiness and see if they will stand in exposed situations. If you send your committees into unfavorable localities and there find your apples you will have the hardiness secured beforehand. I have one apple that I have tried for several years; it was supposed to be a seedling; I refer to what we call Yearl's Winter. Mr. Yearl presented the apple to me when I came to Minnesota about fourteen or fifteen years ago. I got some cions from him and grafted some. In the nursery it did not prove to be remarkably hardy, but the trees, since they have got to bearing, with me have been just a little hardier than the Wealthy. It is not hardy enough so I could recommend it. It is a good winter apple and keeps nicely. Have heard of other apples in Steele County that were highly recommended which, if you would hunt them up you would perhaps find had died, like the one the gentleman referred to. It is possible that a good many others, when you look them up, you may find the old tree dead. I understood years ago that the original Wealthy was dead, that it had died down and new sprouts had come up. I suppose that is so.

Mr. Gideon. It was blighted.

Mr. Dartt. I suppose that is known to be a characteristic of the Wealthy. Some times the main tree will kill down, and if

you save the sprouts and let them grow they will soon replace the old tree and may prove to be a good bearing tree. I was told it would do this by Mr. Gould, of Excelsior. He said to me one time, on seeing one of my trees in that condition: "There's a bunch of sprouts that will produce a wonderful sight of apples if you will let them grow and take care of them." Of course I have seen so many of such sprouts in my experience that would kill down that it is usually my plan to root them out. But I will say, further, that I have been caring for the Wealthy as far as I can and have hopes that it may pay me for my labor some time; it has not done it so far.

Mr. Underwood. Do you cultivate your orchard?

Mr. Dartt. Usually I do.

Mr. Underwood. Do you protect the body of your trees?

Mr. Dartt. I have not; but I tried it in Wisconsin. I have got too many.

Mr. Underwood. I consider Mr. Dartt as a sort of a rudder to this fanciful society of ours. We are all the while drumming up something to build up his hopes only to have them dashed to the ground, and I want to ask him now in regard to that seedling I have mentioned, which is growing about eighteen or twenty miles back from Lake Pepin, on prairie ground, as high as there is in that part of the country. It is on an exposure to the south, and is standing in the sod. The German that now lives on the place don't know very much about it. My attention was called to it, and I have been out there several times to keep watch of it. Now, I want to ask you whether you think it is a very favorable locality. I will say that the tree looks well.

Mr. Dartt. Are there any deep valleys in the vicinity?

Mr. Underwood. There are ravines all through.

Mr. Dartt. How deep are the ravines?

Mr. Underwood. Well, I think nothing but what is tillable. It is a splendid chicken country; there are ravines fifty to a hundred feet deep. I don't remember of anything of note, although we drove all through the locality, hunting chickens.

Mr. Dartt. I should not regard that as a remarkably favorable locality. I wish to be understood, however, as saying that I believe high land in the vicinity of low land is a favorable locality, decidedly so. It is better than low land itself. But when you get where it is all high land for miles around—in one broad sweep of level country, where it is all high—I think it is a trying situation. I think we have a trying situation in Steele

County generally. There are no deep ravines and no streams of water, but it is high tableland. I think all of those sections bordering on deep valleys, or on bodies of water, that are not very much elevated, are favorable localities, and that varieties produced in those localities ought to be thoroughly tested as to hardiness before they are to be recommended to those people who live out on the high lands, to plant generally. I don't know but it is a "fraud" for this society to say to people living in my locality that they can raise all these varieties that you raise, and find them profitable in my locality. I think some of our people so regard it and look at it about in that light. They think if you don't know that such varieties as you recommend won't grow, that you ought to know, for you are supposed to know everything in regard to fruit. You ought to be well informed, and ought not to send out any unreliable varieties. One man said to me that he believed that the introduction of the Wealthy was a damage to Minnesota. I don't believe that; I think it is a grand good thing. But don't try to fool us into the belief that it will grow everywhere, for it won't.

President Smith. We have only about half an hour more this morning. We have a delegate here from Wisconsin who is to make a report on Russian apples and we shall be pleased to hear from him. I will therefore call on Mr. A. G. Tuttle, of Baraboo, for a report on Russian apples.

RUSSIAN APPLES.

Mr. Tuttle. Mr. President, I am able to make only a partial report on Russian apples, although I have been at work and investigating the subject for some fifteen years past. We have some Russian varieties that we think are all right. I exhibited at our State fair this last fall sixty varieties of Russian apples and we made a very good show so far as that is concerned; many of them were very large and showy apples. I have the Longfield and I have been of the opinion that the fruits brought from that portion of Russia, off northeast of Moscow, would be perfectly adapted to the prairie regions of the Northwest; and from my experience with these fruits I have not yet lost faith that that will be the case.

I have not seen anything, among over a hundred varieties that I have in orchard,—I have not seen anything so far as the wintering is concerned, that is hardier than the Wealthy, so far

as the tests I have made. And I consider the Wealthy as hardy as anything that has originated in our State.

The country from which these Russian varieties come is very similar to this; it is a great prairie country of a thousand miles in extent,—a rich prairie country, many portions of it. There are orchards there situated in what we would consider very unfavorable localities, on deep, black soil; but they are successful, and in those orchards they have been growing fruit for hundreds of years. I thought myself, at the start, that we never should be able to find anything among the Russian apples that would keep, from the fact that the trees there were grown so much further north than here, and it is a so much colder country that the apples that were there winter apples would become fall apples here. But we have fruited some that were good keepers, some that will keep nearly to the time of the season of new apples. So that idea has been dissipated. We are going to have a fair number of late-keeping Russian apples. For summer we have an early apple and a better apple than anything else that I have ever grown for an early apple; that is, considering the quality and its appearance, for the market; I do not think we have an apple that is equal to it, as an early apple. It is longer in season than any early apple I have ever known. My apples get ripe about the twenty-fifth of July. I had some at our State fair that had been lying on a shelf in an upper room until the time of the fair and that were in good condition. This apple, so far as quality is concerned, is about like the Early Harvest; I think they are a better apple. The tree seems to be perfectly hardy and is a very early bearer; have had the tree bear when only three years old from the graft; it is a very desirable tree for an early fruit.

Then we have another early apple that is better in quality,—in fact we have nothing better so far as quality is concerned except the Early June. It would not be a good market apple because it scabs somewhat, but it is of very fine quality; the tree is very hardy.

There seems to be a peculiarity that these trees come in sort of classes. There is the Alexander class, there are several apples of that class, all subject to blight, every one; the Tetofsky, and six or seven of that class of apples have the same peculiarity. There are others more showy than the Alexander, some of them that are striped and quite large; these apples are subject quite as much to blight as the Alexander; but as the trees get older they do not show the blight so much. Then we have a class of

apples of the Anis family, and there are several varieties. How valuable they are going to be I am not prepared to give an opinion. The tree is said to be perfectly hardy, said to be the most hardy of the Russian fruits. There is quite a difference in the varieties belonging to the Anis family, as regards the quality of the fruit. We have one known as the Anisette, which is almost if not quite the Duchess; it is very similar to the Duchess; the tree looks very much like a Duchess. We have also the Red Anis and Yellow Anis; I cannot see any difference between the red and yellow. These are among the five varieties found by Mr. Budd in Russia.

We have another apple that we have tested enough so that we are willing to put confidence in it, and that is the Longfield. I don't know of any of the Russian varieties that is perhaps more valuable to plant. I have fruited it for five years in succession and raised a crop every year. I have the apple here. It is an apple of good quality, and I think fully as good as the Fameuse; and I think it is a better keeper; my apples have not rotted as much as the Fameuse. Dr. Regel says of the tree that in an orchard of over a hundred varieties it is the only apple that would bear every year. With me it has fruited, as I say, every year for five years, each year increasing its crop; and I had trees this year the most heavily laden with fruit that I have ever seen. Here is a specimen of the Longfield. Here is an apple that is a great keeper. That tree is a great bearer, and I think the fruit will keep till June. This specimen is the Longfield.

I have another apple that came to me under the name of Lord apple that is much like this one in appearance and is a little more acid, rather a sharp acid, fine grained, and a very good keeper. I think it is going to be a valuable tree for a late keeping apple. It is a good bearer. I neglected to gather the fruit on that tree until the last of October. I was told by a neighbor that he saw a person carrying fruit from my orchard, and had seen him making two or three trips. I examined and found no fruit left except a few specimens I found in the grass; these are the ones. That is a late keeper, probably as late as any I have.

I would say that these apples were on exhibition at the county and State fair. I put them in a box and they were there until two weeks ago when I went and picked them out. That is the Lord apple.

I have no question in my own mind, from what I can see and from my experiments with these Russian fruits, that they are going

to be adapted to this whole prairie region, clear up to Manitoba. Trees have been doing well with me the past five years. Some of my trees set three years ago have been fruiting some, and have come through these hard winters in perfect condition. I can see no reason why these apples, coming from a country much further north than ours, and with conditions very much like ours, should not be adapted to the climate here. There are no orchards on this continent that will compare in extent with the orchards which are to be found in Russia. The whole business of a considerable portion of this country seems to be the growing of fruit in an open prairie country, and it is a business that is successful. The Volga answers to the Mississippi and the Missouri here; it drains a great prairie country, a rich prairie country, and these apples grown on the Upper Volga are transported to Palestine and Southern Russia, and there they find their market. The people living in Palestine get their apples from Russia. Mr. Gibb tells me that they told him there that their mildest winters the thermometer ranged lower than it does here this winter. And that without a particle of snow on the ground the trees were preserved.

It will take some time yet to try and determine the value of these Russian apples. I have some fifty varieties that I have not fruited yet; I fruited some sixty last season and we expect to find something among them that will be of value; we have already found something that I know will be of value to this whole Northwestern country.

I have not come here to represent a nursery; I come here as a fruit grower. My business has been fruit-growing for more than thirty years; I try to throw aside my nursery business whenever I go into a convention to talk fruit. My orders for these trees are fifty times what I am able to supply; I don't take one order in fifty. I am not here to recommend any fruit for the purpose of sale. I have already had too much notoriety on this Russian apple business through your reports and that of Iowa, and the report of Mr. Gibb, of Canada.

Col. Stevens. Have you raised the Russian Transparent?

Mr. Tuttle. Yes, sir; it is the early apple I was speaking of. I think there is some variation in this class of apples. Take the White Transparent and the Yellow Transparent, I can see no difference in the fruit. Whatever else we may find for an early apple among the Russians, I do not expect to find anything better than that. It will be the early apple not only in the Arctic regions but here as well.

Mr. Smith. I would like to inquire about No. 190, known as the Tiesenhausen.

Mr. Tuttle. It is a late keeper; it is of good quality and in form like the Ben Davis. Prof. Budd, when he returned from Europe, gave out the idea that the apples that I had were not the true Russian apples, but were German and coast apples. Well, I happened to have pretty much all the kinds he mentioned and among the varieties I have are the five varieties of the Anis. I have taken pains to get the best, and Mr. Gibb, of Quebec, says, after looking over my orchard and examining my Russian apples in my orchard, that I have nearly every variety of value. At that time he held out the idea that my apples were not adapted to Minnesota; but I guess, perhaps, he has now given that up. I have had a little controversy with him. The fact of the matter is that Dr. Reed, in collecting those fruits for the United States, did very thorough work, and he selected apples which were grown throughout the whole of Russia.

Mr. Sias. I would inquire if you have fruited the Red Black?

Mr. Tuttle. No, sir; I have not.

Mr. Sias. I have a specimen here I would like to show you.

Mr. Tuttle. I would like to say a word about the Repka, on account of its late keeping, and which Messrs. Elwanger and Barry highly recommend. With me it is a late keeper and seems to be of very great value. My trees stand on June grass sod and have stood there for five or six years, but have borne every year; the past year they bore a very heavy crop.

I wish to say here that I would rather be the originator of the Wealthy apple than to hold the highest office in this State. It has done more for the Wisconsin Horticultural Society than anything that has ever been done.

Mr. Smith. Is it not your opinion that these seedlings show better characteristics as to shipping and keeping qualities than the average of the Russians?

Mr. Tuttle. I do not think that a promiscuous lot of seedlings would show equal keeping qualities. We have very few Russian varieties that are not better keepers than the Duchess. According to one authority the Longfield will keep as well as the Snow apple, and we call the Snow apple pretty good.

Now, I am not advertising these apples myself; in fact, many of these new kinds I haven't got in the nursery at all, that is, I have none for sale. Until Mr. Gibb came to my place there

were several kinds I didn't know anything about. There are men who are traveling through the country selling Russian apples and it is a credit to their business, but there are lots of things that are sold that are not Russian. The Pewaukee is sometimes sold as a Russian apple, and the Waldron. They come here and sell them, but I have not seen any of these men traveling and selling Russian apples that were selling a list of strictly Russian apples. They send out the Lord apple when it is nothing more than the Alexander.

Mr. Sias. I have fruited about fifty varieties of these new Russians and I fully agree with Mr. Tuttle on that point raised by Mr. Smith, as to whether they average as well as the seedlings. I think the Russian varieties average much better; that is, as to quality and hardiness as compared with the seedlings. Now, I am on the seedling committee and don't wish to say anything out of the way in regard to the seedlings, for I believe in the seedlings, but facts are what we are to get at. The Russians are hardy and they average much better than a lot of seedlings through the country, such as are generally to be found.

Mr. Tuttle. Mr. Dodge says he did not find the true Duchess in Russia. The Red Anisette, the Yellow and the Green Russian are all so near alike that one has difficulty to distinguish between them; and yet I can see a little difference. They are Duchess in tree and Duchess in fruit.

An adjournment was here taken until afternoon.

EIGHTH ANNUAL MEETING
OF THE
MINNESOTA AMBER CANE ASSOCIATION.

AFTERNOON SESSION.

SECOND DAY—WEDNESDAY, Jan. 21, 1885.

The afternoon session of Wednesday was set apart by previous arrangement for the transaction of business in connection with the Amber cane industry.

At 2 o'clock P. M. the convention was called to order by Capt. Russell Blakeley, president of the Minnesota Amber Cane Association, who stated that many of the members of the association were in New Orleans in attendance upon the World's Industrial and Cotton Centennial Exposition, now in session there, which would account for the limited attendance here this afternoon, and welcomed the large audience present to this meeting, and invited them to participate in its deliberations and discussions.

Prof. E. D. Porter, secretary of the association, stated that as the proceedings of the last meeting were all published in the daily press, he had not brought with him the records of daily meetings for last year, supposing they were completed with the close of the annual meeting. He would present to the meeting his financial report as secretary and treasurer for the past year:

Report of the Secretary and Treasurer of the Minnesota Amber Cane Association for the year ending Jan. 21, 1885:

Balance in the treasurer's hands Jan. 22, 1884.....	\$80 90
Amount received from membership fees, 1884.....	22 00
Total	\$102 90
Cash paid for printing notices and tickets	\$7 50
“ “ record book.....	1 90
“ “ stationery and postage	2 20
	11 60
Balance	\$91 30

It was moved that the report be received and adopted. Carried.

Capt. Blakeley. I would suggest that the officers for the ensuing year might be elected at the present time.

Mr. Ditus Day, of Farmington. There are so very few of the members of the association present, many of them having gone South, among them Mr. Kenney and others, I therefore move that the present officers of the Amber Cane Association, including the president, vice president, secretary and treasurer, be continued for another year.

The motion was amended to include the members of the executive committee and adopted.

The officers thus elected are as follows:

President—Capt. Russell Blakeley, St. Paul.

Vice President—Ditus Day, Farmington.

Secretary and Treasurer—Prof. Edward D. Porter, Minneapolis.

Executive Committee—R. Blakeley, St. Paul; D. Day, Farmington; E. D. Porter, Minneapolis; Seth H. Kenney, Morristown; J. F. Porter, Red Wing.

Prof. Porter moved that a committee be appointed by the chair on exhibits of sugar and syrup, and Messrs. Ditus Day and Wyman Elliot were appointed as such committee. Mr. Elliot asked to be excused from serving, as his time was occupied otherwise, and Mr. R. C. Judson was appointed in place of Mr. Elliot.

Capt. Blakeley. It is with pleasure that I am able to announce the presence of the honorable ex-commissioner of agriculture of the United States, who has been identified with the amber cane

interests of the United States as well as of the State of Minnesota. I am glad to welcome him to our meeting, and should be glad to have him address the convention.

Gen. W. G. Le Duc. Mr. President, I am very much obliged to you for the very kind introduction and invitation extended to me, and I am very glad to meet with the friends here to-day. I find here many familiar faces and a great many that are new, at least to me, although perhaps not new to you. It would afford me pleasure to join heartily in your plans and take part in your deliberations. That I could give you any information on amber cane I think is extremely doubtful. Of course I have felt a lively interest in the sugar products of our country, and this is especially true with regard to the product of our own State. I have traveled to some extent in foreign countries and in places where sugar is produced, perhaps, a great deal cheaper than it can be here. It may be interesting to some of you to know how much cheaper sugar can be made in Mexico than it can be here, and that it would be idle for us to undertake to compete with the people of that country in sugar-making under similar circumstances.

I have been in Mexico where the sugar grows from a single planting and yields a crop for eighteen years, and yields a large crop of sugar, which is easily obtained. They boil the juice in open kettles and it makes a strong, well-grained sugar, valuable for refining or for any other purpose. This was in Sierras Calientes on the west shore, or on the Gulf of California. It has occurred to me that when we have ratified the treaty that is now before Congress that the people of Mexico might compete with us who raise the amber cane, and the question was suggested as to how far this would interfere or come in competition with our industry, if sugar were to be brought from that country, where it may be raised so cheaply. There are other elements that enter into the production of sugar; there is the element of population, and there, my friends, we have the advantage; there is the element of mind and body, and there we have the advantage; there is the element of transportation to market, and there of course we have the advantage; because in that country, where I have seen so excellent a growth of cane, the people are very much as they were 1,800 years ago. I cannot better illustrate the condition of that society there to you than to tell you of a conversation I had with an American who had been settled there for twenty-nine years, a gentleman who had

gone into that country to save his life. He was complaining about the "Yankee greasers" that came and settled in Mexico, because, as he said, they were the worst kind of greasers in the world. I asked him "Why do you stay here; is it to get rich?" "Not exactly that," he says. "I have had my ups and downs in the world, but," he says, "I have a hope of a hereafter." "Yes, what is it?" "Well," he says, "you know my people down here are all good Christians; we believe in the Bible and are of the Catholic kind and of course are earnest, conscientious Catholics and all believe in the second coming of Christ, and when that takes place I hope to have my compensation for living here." I asked, "Well, how do you expect to obtain that?" "Why," he says, "when Christ comes again on this earth he would very naturally come down first to the country where he lived when he was on earth before, and when he found everything there reversed and entirely changed, he would leave the land of Palestine and go to Rome; there he would see the great temples and palaces erected for the worship of God, and he would say, 'this is not my nation and people' and he would come over to New York; and when he got there and heard the bustle and rattle and the rush of the cars and saw the hurry of the people, he would naturally get out of that country as fast as possible and would pass over the country until he reached this fair land, where he would see the people carrying water on their heads, or riding on a jackass's back, or plowing with a stick, and he would raise his hands and say: 'Lo! and behold my chosen people, just as I left them 1,800 years ago!' and I hope when that ingathering comes that I may have some chance." (Laughter.)

Now, my friends, there is no better illustration of the class of people with whom we have to compete in this new territory, for we may describe them just as they were hundreds of years ago. Think of our American citizens competing with such people in raising sugar; if they could not compete with them in that or in anything else I would be ashamed of my people. But I will not detain you with any extended remarks; this is a little talk that your president has gotten out of me and that without any reflection. I am very glad to be among you in Minnesota and have an opportunity to meet with you and to be among those who have intelligent faces and who live on something besides beans. I tell you if you ever go into that country you had better take your own provisions with you if you don't want to starve to death. There

are two schools in the country; one I saw and the other I heard of. Give me a country where the people are compelled to be active both in mind and body. In that country where fruits abound you would not find any fruit upon the table, not even a melon or an orange; they do not know how to live. If the treaty is ratified we shall be compelled to compete with these people of Mexico in the making of sugar.

Prof. W. A. Henry, of the Wisconsin State University, Madison, Wis., was then introduced but excused himself for the present from making any remarks.

Capt. Blakeley then proceeded to deliver the president's annual address, as follows:

CAPT. BLAKELEY'S ANNUAL ADDRESS.

Gentlemen of the Convention:

The address of your president in years past has contained a general review of our industry within the State during the year, as reported by its members assembled in convention. Owing to the absence of many of the principal cane growers of the State I have not been able to ascertain the amount of sugar and syrup made within the State during the season. I hope this omission may be supplied during the session so that it may appear in the record of our proceedings. I am, however, able to say that the season has been more than an average good one and that our confidence is as strong as at any time in the past in the immense importance of this industry to the State. As you are aware, the convention and its sugar and syrups are very creditably represented in the great exposition at New Orleans, and our thanks are due to the persons who have contributed to this result. Prof. Porter, our worthy secretary, will address you on the situation and result of our exhibit, and I am sure that you may expect a gratifying report from him on this effort to call the attention of the general public to the result of our enterprise in developing this new source of supply of sugar and syrup for our consumption.

The present condition of the sugar interest and its future welfare I am sure is of sufficient interest to you to justify me in making rather more than passing reference to it. As you are aware, the increasing demand and supply of sugar throughout the commercial world during the last decade is without a parallel in history. The average produce of cane sugar is annually about

2,150,000 tons, excluding China and India. The amount of beet sugar made in Europe in 1884 was 2,530,000 tons, which makes a total of 4,680,000 tons. The consumption of Europe for a year ending Sept. 30, 1884, was 2,289,000 tons. Amount consumed in the United States for the year ending June 30, 1884, is estimated at 1,251,000 tons of 2,240 lbs., which being deducted from the aggregate amount produced leaves 1,140,000 tons for the consumption of all countries beside Europe and the United States.

There was on hand in Europe on Oct. 30, 1884, 552,000 tons. I have not been able to lay my hand upon an estimate of the stock on hand in the United States on June 30, 1884, but the increased importation for the year is about 250,000 tons, and the consumption *per capita* of fifty-one pounds, an increase of seven and eighty-six one hundredths pounds during the year. The average duty paid upon dutiable sugar for 1884 was one and ninety-four one-hundredths cents per pound.

I believe that the foregoing statistics are reliable. They are taken from French and British authorities in Europe and from what I regard as the best authority in this country. There is by no means an extraordinary difference between the production and consumption; yet sugar, when compared with the prices of other articles of consumption, is lower than ever before in the last one hundred years. In the London market, January 1st, beet, eighty-eight per cent purity, f. o. b., was quoted at ten shillings per hundred pounds, and Cuba centrifugal seven shillings and six pence per hundred or long hundred pounds. Fair refining on January 1st was four and five-eighths cents in New York.

Another remarkable condition of things has been developed. There have been imported into Great Britain during the year 1893, 270 tons of refined sugar, and while we have imported of beet grown sugar to a very large amount, we have exported to Great Britain 49,643 tons of refined sugar. Such are some of the remarkable results of legislation in this country and Europe in regard to sugar. You ask, what is the reason for this condition of things. If I may be permitted to express an opinion I should say that it was a panic. Sugar cannot be made for these ruinous prices anywhere, and while it is a very serious condition of things at present, it will soon right itself. While syrup is selling for a usual good price our people who have been engaged in making sugar have had a very disastrous season. I think it will be of short duration.

There is one other source of trouble to our industry. I refer to the Spanish-American treaty. What ever induced the president to recommend such a measure is beyond my comprehension. If I had been in favor of making a trade for free sugar, I should have asked Germany, France, Austria, and Belgium for reciprocity by exchanging pork, beef, flour, whisky, and tobacco for free sugar, to the amount of \$100,000,000; but to make the offer to take from Spain \$100,000,000 worth of sugar and tobacco grown by slaves and coolies, without a possible equivalent, is certainly a mistake. But you need not be alarmed, such a thing as that cannot pass the senate of the United States; even the free trade clubs of the country cry out against it.

The general effort that is being made to improve the processes of manufacture of sugar promises grand results. The zeal, enterprise and commendable sagacity that is now displayed, both by associations and individuals, in adopting the most scientific and approved methods of work, give us undoubted confidence in the complete success in our calling, against even the combination of capital and slave labor in Cuba, or the scientific energy and government support of beet grown sugar in Europe.

I learn that the Rio Grande Company, of New Jersey, have adopted the diffusion of their *bagasse* after it has passed the mill, and have in other ways changed their policy of former years. The *bagasse*, after leaving the mill, is carried up to the floor above the diffusion room and runs through a cutting machine and dropped into a bucket or carrier which is run from its place over the diffusers and emptied into the diffusers when it is necessary to refill them. The diffusers are ten in number, seven feet high, forty inches in diameter at the top and thirty inches at the bottom. The water that is used in this process is heated to above two hundred and twelve degrees Fahrenheit. One of the diffusers can be emptied and filled in about five minutes, and to pass the water through the whole number of diffusers in the battery takes from fifty minutes to an hour. This battery of diffusers works the *bagasse* cut into chips as it runs from the mill, of about two hundred tons of cane *per diem*.

This cane is brought from the field by a railroad operated by mules, and carries the cane as cut in the field, seed and all, and it is unloaded by portable derricks. When the cane is placed upon the cars there is a string placed around each bunch, which may contain five hundred pounds each, and the hook of the derrick is placed in this string and the cane delivered at such place

as it is needed for the mill carrier. The cane when raised by the derrick is swung under a knife, which cuts off the seed head of the bunch, which is deposited in a convenient receptacle, to be loaded on the cars as they return to the field, and is carried to a convenient point to their pig pens, where it is stacked for feeding the hogs, of which they keep about five hundred. The *bagasse* from the diffusors is also carried to the pens and worked into manure of the very best quality for their cane fields during the winter. This manner of disposing of their seeds and *bagasse* enables the company to make both pork for the market with their seed and an abundance of manure for their fields, which produce the finest quality of cane.

Mr. Hughes sent me a polite invitation to visit them during the working season, but I was unfortunately unable to do so. I have not been able to learn the result of their season's work, but will guarantee that their report will be a gratification to all. I will not allude to what is being done in Louisiana, as I expect to hear from Prof. Porter fully on that locality, and possibly more definitely from Rio Grande from some one in the convention. In conclusion I still say that the amber cane sugar and syrup industry will overcome all adverse and opposing influences in Minnesota in spite of Prof. Wiley's isothermal line and the unfriendly legislation of the government.

THE AMBER CANE INDUSTRY AT NEW ORLEANS.

BY PROF. E. D. PORTER.

Prof. Porter was then called upon to report on the New Orleans exhibit. He said:

Mr. President and Gentlemen of the Association:

My report will be very brief. I presume you are all interested to know what kind of a show Minnesota is making among the sugar makers of our country. Before making a report upon the exhibit there I want to say a few words, by way of preface or explanation, concerning the very disastrous years of 1882 and 1883, which were very discouraging to Minnesota amber cane growers and to the industry generally throughout the Northwest; and that will account, of course, in part for the diminished attendance and membership at the present meeting. Last year, 1883, scarcely a stalk of cane was matured in Minnesota. The very backward

season in the spring, together with an early fall, shortened the time for maturing the crop. We found we had very little cane that was matured in the State; there was very little good syrup manufactured and no sugar made from it that I am aware of. From these causes there was the past year a diminished area planted, largely attributable to the uncertainty of the crop the previous year. This will account in part for any diminution which may be apparent in the industry. The past year has been a very good one, not only for this State but for the entire Northwest. I have seen specimens of cane that matured in the northern part of Dakota and along the line of the Northern Pacific Railroad.

At our University Experimental Farm I had forty-two varieties of sorghum, about every variety that I could find growing in this country or in Europe. And I want to say this, that there was nothing among the different varieties that would surpass the amber cane; I found nothing that was superior to it for growth and maturity, or that was equal to it in saccharine development. If we had two or three weeks more of growing season there are two or three varieties that would perhaps give a larger quantity to the acre; but out of the forty-two varieties there was not one that would compare with the early amber of our State.

I conducted a series of experiments with these different varieties for the purpose of determining the earliest period at which the crop could be cut profitably for manufacture. I commenced the examination for sugar with the polirascopes, and by the "gravity method" as soon as the seed head appeared, and continued them from day to day until growth was stopped by frost. The result of these tests only served to corroborate those of previous seasons, both in this State and elsewhere, and proved conclusively that the development of sugar in all varieties of sorghum keeps pace with the development of the seed,—commencing when the seed first appears, and reaching its maximum when fully matured,—and that the cane can be profitably cut and worked for syrup as soon as it is in the "milk," but for *sugar* should not be cut until the seed has hardened or matured.

I intended to have had specimens of these forty-two varieties here but my absence at New Orleans has prevented.

Now, in regard to what we have done at New Orleans. We have on exhibition there about one ton of sugar and ten barrels of syrup from Minnesota, of which the specimens on the table here are fair samples. The most of this sugar was manufactured by Mr. J. F. Porter, of Red Wing. You will remember that he

commenced about five years ago at Red Wing, without any previous experience; he was a tanner by profession, but taking a deep interest in this new industry he went to work, and the result of a single season was about 1,500 pounds of sugar, made with the use of the crudest home implements and machinery. We have here three specimens differing in color, and, as I said, we have about a ton of sugar like these specimens on exhibition, with about ten barrels of syrup. The syrup was manufactured chiefly by Mr. Kenney, of Morristown, and both the sugar and the syrup are attracting an immense amount of attention there. Almost at any time you may find an interested group of sugar planters of Louisiana or Texas, and people from all portions of the South, around that exhibit. I was very much amused at one group shortly after the exhibit was first up. There were in the number some four or five gentlemen and all of them I found afterwards to be sugar planters of Lower Louisiana; they were making remarks. One of them went by our exhibit, which we had just got in place. We had an open pan by a table and syrup for testing, and he touched his finger to it and tasted it; he looked at the sugar and read "Minnesota." He took some of it between his fingers and rubbed it between them and tasted it, and looked astonished. He called to a party that was passing by and said, "Come here, judge!" He asked what was the matter. He came up and the other said: "I'll be d—d if these Minnesota fellows haven't scooped us!" (Laughter.) One of them came up to the attendant in charge and began to ask questions, such as: "What does it cost to make it?" etc. The other interrupted and said, "That has nothing to do with it; *they have got the sugar.*" They looked at the mottoes and examined the exhibit very carefully. The barrels are made of black walnut and are finished off in a neat and attractive manner.

On one side of the exhibit appears the following: "Minnesota Amber Cane, Matures its Crop in Ninety Days." On the other side, "Minnesota Makes Her Own Sugars and Syrups." On another side, "Minnesota Don't Fear the Sugar Line." On another face is this: "We Are With You, Major Burke, on the Sugar Question." Of course the sugar planters coming there do not leave until they have read the four signs, and ask questions as to where it is raised, what is the cost, and so on. They have been greatly surprised at the idea of sugar being successfully grown nearly 1,200 miles beyond what has been supposed to be the sugar belt, and sugar of the fine quality which is made

from the early amber. The planters send for jugs and decanters to be filled with specimens of the syrup and there is not a single person who has seen it but has pronounced our syrup superior for table purposes to any syrup they have in the South. There is no comparison between it and their best specimens as taken from their plantations. We have on exhibition the finest specimens of syrup from any State of the Union, made from Amber Cane. The Sterling Sugar Works have on exhibition some very fine specimens of sugar; they are lighter colored than ours because they have been bleached. They are whiter but not as good grain as ours. Their raw sugar is inferior to ours. They have not exhibited their goods in so attractive a manner as Minnesota has done and it seems to be generally conceded by common consent that she has "taken the cake." And this assertion is borne out by the fact that after the most searching analysis, and the strongest competition, Minnesota received the highest awards for the best "raw" sugar, the best "full" syrup, and the best barrels of any grade.

I had photographs taken of our exhibits but could not get the negatives printed in time to bring them with me. We will soon have photographs here of the exhibits in this as well as in all the other departments.

While there I received an invitation to visit some of the sugar plantations on the Lower Mississippi River. I accepted the invitation and spent two days on a trip which was of much interest and I picked up a good many items of value. The best plantation was that of Gov. Warmouth, which is located below New Orleans. We went to Gen. Diamond's; that is the largest one. The whole establishment is old and is in about the condition one might expect it to be after forty years' wear and tear. At Gov. Warmouth's plantation the machinery is all new and he has kept fully abreast with the times; he is turning out the very finest quality of goods.

I visited five different plantations and examined them very critically. I have specimens here of the sugar produced on the governor's plantation. This is a specimen of sugar from one of the refineries they have established in connection with their works. It is a specimen of Louisiana sugar refined. Here is a specimen as it came from the centrifugal; it is raw sugar without refining. I have specimens of second and third quality of sugar. This specimen of sugar I could have bought at four cents and a half a pound on the plantation; this sugar, at two and a half

cents; and that sugar, at two cents a pound; so you may know how much money there is in the manufacture of sugar in Louisiana.

At Gen. Diamond's they work up 1,300 acres of cane, and he told me the result of the work for three years, which will afford an idea of the profits of the business. That three years ago they cleared \$57,000 from that plantation, over and above all of the expenses. Last year they lost about \$7,000, and this year they are going to just about meet the expenses on the plantation. Large numbers of the plantations are bankrupt, or largely in debt, many of them having been bankrupt for three years past, and the sugar industry is entirely prostrated in Louisiana. If the Spanish treaty is passed by Congress the industry will be totally destroyed.

In regard to the amber cane industry and the reason why they feel down there that we have "scooped" them, is this: In the first place we have millions of acres of sugar land in Minnesota. In Louisiana, as you leave New Orleans and go down the river, towards the gulf, you can see from the deck of the steamboat about all the fine sugar land they have. All their famous old sugar plantations are in sight from the deck of the steamer, and the lands generally extend not more than a mile and a half from the edge of the stream, either to the right or to the left. As you are well aware the Mississippi River is elevated from four to seven and in some places ten feet above the general surface of the land. The country recedes on either side, and there are levees, or embankments, on both sides of the river, to guard against the danger of the overflowing of the water of the Mississippi. The drainage is all to the rear of the plantations. They have cleared the land just as far as possible; but if you want to drain and tile it, it is the heaviest, muckiest and worst kind of land for a person to attempt to cultivate that you ever saw. These are the sugar lands of Louisiana. Then, again, not only is it bad land to work, but there is a constant dread of an overflow. The overflow of last season destroyed all the plantations along the west bank of the river, with the exception of Governor Warmouth's and one or two others, for a distance of over twenty miles south of New Orleans towards the gulf. It was the overflow of last June, which was the tail end of the overflow in the Upper Mississippi in May. A crevasse which occurred at that time overflowed a large portion of the country and destroyed all the plantations, with the exceptions mentioned. With most of them

this last year's crop was entirely destroyed; the cane was entirely ruined, and the water has to be drained off and the cane replanted before they are again productive.

There is one great advantage that we possess in the amber cane industry; we have got millions of acres of land capable of producing the very finest crops of amber cane. I have seen just as many tons produced of amber cane per acre from one planting as I find on the Louisiana plantations with their three varieties of cane. I may describe the three varieties which they have down there. One is called the Louisiana cane, which is a large, heavy and short-jointed variety. Another is the "creole," long-jointed and white. The other is the red cane. They cultivate all three varieties on most of the plantations. The cane never seeds in that climate, but keeps on growing until checked by the frosts. The cane grows on an average to a height of about eight feet. In cutting it they trim off the tops and reject the worthless part.

Now, on a farm of 1,200 acres they will have only about 400 acres of cane to work up; practically one-fourth of their land is laying out, or one-fourth is old cane and the other is young. They lay out of the use of their capital about three years. They have got to cultivate three years before they get their crop. We get our crop in from ninety days to four months from planting. There the only valuable part of the cane is what they can use to make sugar and syrup. They make no use whatever of the blades. There is no seed, and their *bagasse* is a waste product on most of the plantations. In Minnesota we can make the blades worth enough to pay for harvesting the cane, and the crop of seed will pay for the entire expense of cultivation, and it leaves us our sugar and syrup as a clear profit. This is an advantage which I think will enable us at any time to compete with the people of Louisiana in the production of sugar and syrup.

Capt. Blakeley. Or anybody else.

Prof. Porter. Or anybody else.

Gen. Le Duc. Are they not introducing sorghum in that country?

Prof. Porter. They say that it costs them too much. If they would go onto the back or high lands and introduce sorghum they could do it, and I understand they are doing that to some extent. The sorghum is coming into use to supply the home demand.

Now, I wish to say in regard to values, I had offered to me there the very best quality of New Orleans molasses at twenty-five cents; the second quality for eleven cents; the third quality for seven cents a gallon. The price of sugar was quoted to me at two, two and one-half and four cents a pound. Now then, I don't know as there has been a gallon of syrup produced from the crop of amber cane raised in Minnesota during the past year which has sold for less than fifty cents a gallon. There is enough demand for the entire product here in Minnesota, so that we need not trouble ourselves about an over-production until we have met the demand for syrup. Taking all these things into consideration, I do not think that we have met with sufficient drawbacks as yet to discourage us in the growth of amber cane; but there is everything to encourage us. In Louisiana they calculate that they will get only one paying crop out of three or four.

There were two or three processes that I found in use at Gov. Warmouth's which are not in general use upon other plantations. The cane, instead of being put through the crusher in the ordinary way, is torn to pieces by a shredder. The cane is stripped and it is put into this machine and torn to pieces and then passes through the rolls; and they claim that by this process they make a gain of about twelve per cent in the extraction of the juice. I was talking there with their chemist and he informed me that they had raised the product of the juice from sixty-eight to eighty per cent. Gov. Warmouth has introduced the most recent and improved machinery to be had, and one of his improvements is the use of a *bagasse* burner; by the use of that the cane passes on to a separator which conveys it along until it drops in front of the burner. It is not handled from the time the cane is put in; the men do not touch it from the time it is laid onto the mule cart out in the cane field. He has laid a tramway from the mill out to his cane field, so that one mule can haul seven cars and does the work of twenty-eight mules or horses in the ordinary way; and from the time that the cane is taken up and laid on the car the men do not touch it again until it reaches the mill; it all goes by machinery, and the cane goes off into smoke one way and the juice into syrup and sugar the other, and in that way, by the application of labor-saving machinery and the most improved machinery that he can get, Gov. Warmouth is overcoming the discouragements and drawbacks that other planters have been contending with upon their plan-

tations. His profits this year upon his plantation he estimates will be about \$50,000.

Capt. Blakeley. How much do they value their cane per ton?

Prof. Porter. I did not ask.

Capt. Blakeley. I saw a report somewhere that they were getting about one hundred and eighty odd pounds of sugar from a ton of the cane; that is a good deal more than we could do with the amber cane.

Prof. Porter. The quality of the sugar may be seen by examining these samples. On Mr. Diamond's plantation I found that he was not making this quality of sugar; he was getting a lower grade.

Gen. Le Duc. He uses open kettles and open pans?

Prof. Porter. Yes, as well as a vacuum pan.

Gen. Le Duc. Did they use the corn stalks anywhere where you were?

Prof. Porter. No, sir; it was not used, and I did not find a single hill of corn on one of these five plantations that I visited. Every pound of meat, and every loaf of bread, and every particle of grain that they feed their stock was imported, and all they have to support this system of agriculture is their sugar and molasses. Of course, in the nature of things, an industry of that kind cannot stand very long.

Capt. Blakeley. Could you give us an estimate of the quantity of seed that may be produced from an acre of land, from any of your experiments?

Prof. Porter. The average product is about twenty-five bushels to the acre.

Gen. Le Duc. How do you feed it?

Prof. Porter. I have used it with advantage as feed for hogs, mixed with the hot skimmings,—or ground and fed as cornmeal. In the East I have grown it in large quantities, both for feed and for seed. The plan I have found the most economical and expeditious for saving seed is the following: Take into the field three "horses" about the size and shape of a common saw-horse, upon which the cut cane is to be placed. Let one man, provided with a straight-bladed corn knife, or a cane *machete*, pass between the rows, and with a quick downward stroke with the back of the knife strip the blades from the stalks; then let another hand follow and cut the canes from the hills and throw them on the horses, the heads all one way; then let a third man, with one

stroke of the cane knife, cut the heads at about the first joint, and tie the bundle with two bands. Move the horses as the cutting advances. The seed heads will thus be left in small piles, and after the cutting is done gather up the blades which are scattered over the ground, scatter them in convenient patches and spread the tufts of cane seed on them; they will cure in this way without moulding. When dry, run through a threshing machine and clean up like ordinary small grain.

Prof. Henry. Have you ever attempted to bulk your seed in a bin?

Prof. Porter. I have; I have had no difficulty in keeping it. There is one objection to threshing by machinery, the grain is liable to be cracked and thus injured for seed.

The committee appointed by the chair to examine the specimens of sugar and syrup on exhibition, here presented the following:

Your committee appointed to examine the various samples of amber cane sugar and syrup on the tables of the association, respectfully report that we find all the exhibits of a superior quality, and, as compared with those presented a few years ago, mark a most gratifying progress in this industry.

In the class of defecated or limed and sulphured syrups, we find that made by Mr. J. F. Porter, of Red Wing, Minn., entitled to the first place, and that exhibited by Hon. Seth H. Kenney, of Morristown, Minn., to the second.

In the class of raw, or unlimed syrups, we find that of K. H. Whipple, of Minnetonka, Minn., first, and that of W. G. Ford, Newport, Minn., second.

The samples of sugar exhibited by Mr. J. F. Porter, of Red Wing, Minn., are in every respect equal to those on exhibition from the sugar plantations of Louisiana.

[Signed]

DITUS DAY,
R. C. JUDSON,
W. G. LE DUC. } Committee.

Capt. Blakeley. We would like to hear from Prof. Henry, and get a history of things at Madison.

Prof. Henry. Mr. President, we in Wisconsin, of course, owe our sorghum cane industry, or more fitly termed "amber cane" industry, to the people of this State, and to our former commissioner of agriculture.

Now, we have been ever grateful for that, and we have always looked up in this direction for help and consolation, for we have needed it sometimes. We started some experiments on the experimental farm. We have had a vacuum pan and an experimental sugar house, and for two seasons we have made syrup and sugar. The second year we attempted to make sugar economically, in a small way; that is, we wanted to see what we could make sugar for, and we have kept an account of all our expenses. In doing that, we found, not charging anything for our outfit, simply counting the prices we paid for fuel, for growing and getting the sugar ready for market, but not barreled, it cost us four and one-half cents a pound. The sugar would not be worth hardly that to-day, but at that time there would be a fair profit left. At that time I was careful to gather up the statistics of our State in regard to the manufacture of syrup; for while some have talked about sugar, I thought I would rather talk about syrup; we must get our bread and butter to-day from our syrups. I found that we were manufacturing about 600,000 gallons of syrup, in that neighborhood. I sent circulars all over the State and gathered up the information. In 1882 there were about 700,000 gallons produced in the State. Last year there was nearly an entire failure.

It may be asked what we have done this past year in Wisconsin. The failure of the preceding year of course put us back somewhat; yet we started in and have done magnificently both for the amount and the quality of the article manufactured.

I was at Mr. Powell's, at River Falls, last Saturday and he told me that they had manufactured 11,000 gallons. I sampled the syrup at the farmer's houses and it was simply number one. I cannot imagine how it could be superior unless it was run through bone charcoal to clarify it. The color was not as fine as some of your samples, but the flavor was number one.

We have one company manufacturing more than that. Williams & Flynn bought up a lot of land along the Wisconsin River, a very poor quality of land, which was considered as absolutely worthless and which cost them about twenty-five cents to a dollar and a quarter an acre, and which had reverted for taxes. They put up large cane works and they planted on the fresh sod, but the frost took them the first year. This year they continued their efforts and they have made 17,000 gallons of syrup. Next year I am confident they will largely increase that amount.

Now you can see why we can afford to help them in the begin-

ning and to foster this industry. The State can well afford to give it encouragement.

Williams & Flynn have one of these frame bins that we have heard of, which is a very simple affair, in which they keep the seed. I find now that our Wisconsin farmers and others who are engaged in this industry are giving up the stripping of the cane.

Gen. Le Duc. Is the reason that it does not pay?

Prof. Henry. The point is to work for economy in the cultivation, in the handling and in the saving of the product. There is where Germany succeeds in the sugar industry. We can grow fodder so cheaply that we cannot afford to spend the time to handle the blades or to strip the cane. Messrs. Powell and Williams & Flynn told me that they could not afford to have their cane stripped. The defecation with the lime is a little different. This is a point worth remembering in order to see if there is not a way to economize in this particular.

Upon this matter of saving the seed heads I would say, that we found at Madison that our crop of seed was especially good in 1881, and there was one piece that yielded as high as thirty-two bushels of seed to the acre of Minnesota early amber, and the seed weighed fifty pounds to the bushel.

Mr. Whipple. How was the cane grown?

Prof. Henry. In hills three feet eight inches one way and four feet the other; with about seven stalks in the hill. It was grown for sugar, not for syrup. But let me tell you that there is a great difference in the seed, or the amount of seed in the heads that is grown; cane heads fill with more variation than wheat heads. That year we had a very heavy seed crop and our cane that yielded over thirty-two bushels to the acre yielded a thousand pounds of sugar; that is we extracted that much. One hundred gallons of syrup, nine hundred and ninety-eight pounds of sugar and thirty-three bushels of seed were the products of an acre, in round numbers, and that was replanted cane at that. It was a very successful little crop.

Now, I have said that I would not attempt to strip my cane if I could succeed without. The second point is, do not waste the seed. Now, how shall we save it? Save it just as economically as you can. Feed it to your fattening hogs. A good way is to begin early to feed your cane seed; you will be surprised to see how it will help you out. We can keep hogs alive indefinitely on the seed, and by mixing the "skims" they will thrive almost

as well as with the use of Indian corn; but in our experiments in feeding cane seed with Indian corn I have been disappointed in the results. While analysis shows them to be nearly equal in nutritious equivalents, I was able to obtain only about fifty per cent of feeding value from sorghum seed, as compared with Indian corn, pound for pound.

Prof. Porter. Was it bolted or unbolted?

Prof. Henry. It was just ground in a common feedmill and fed with the hulls.

My work is to mingle with the farmers of Wisconsin and do them what service I can. I have been out this cold weather from farm to farm, meeting with the granges or the farmers' clubs. I find that we are the most wasteful people on earth. It is a national disgrace that our farmers will persist in wasting their products the way they do. I find people nearly starving to death in a country where we may get as good prices nearly as you can get anywhere. We should utilize the skimmings; use them as a fertilizer, if for nothing else; I use them to feed to the pigs. But in using them I would not let them get too sour. I would not feed them exclusively; recollect that. Don't try to feed the skimmings and nothing else, but mix them with their food. Williams & Flynn had no hogs. One of the firm came up with me on the train; was coming up to sell some carloads of syrup and we were talking about it. I said to him that was perfectly extravagant; he replied that he knew it and they would never do it again.

I am confident that we are going right ahead with this industry in our State. I should say that the amount of syrup produced in Wisconsin the past year has not been less than 750,000 gallons, which is worth fifty cents per gallon. The credit of this belongs to your good people of Minnesota, and we of Wisconsin are willing to give you the honor for it.

Gen. Le Duc. I would like to inquire about the defecation; how was it changed where the leaves were put through, if you will be kind enough to give us the process?

Prof. Henry. I could not in detail only to give you this: One man used coal-black, which went into the syrup. He was asked what was the difference. He said it took a little more lime. There is nothing else used yet but the lime.

Capt. Blakeley. Will the professor tell us about Mr. Powell's vinegar works?

Prof. Henry. Mr. Powell has immense tanks provided where

he keeps the material from which he makes vinegar. Into these tanks he puts the skimmings and lets them stand there. I was in his syrup house and I found his tank and its contents standing without any protection; he says he has let it stand out one or two winters and says he has no trouble in making good vinegar the next season. I believe he says it freezes very considerably; and yet it makes very good vinegar.

Capt. Blakeley. I have a barrel of it myself and prefer it to anything else.

Prof. Porter. I have found this utilization of a waste product, one of the most profitable branches of the amber cane industry, and in the line of the economy, so strongly urged by Prof. Henry, my practice has been to feed the skimmings from the "raw" end of the pan to my hogs, and to save the skimmings from the "finishing" pan until enough had accumulated to make a good "run," when I diluted them with about six parts of water and boiled down a second time. I thus obtained a good but dark colored syrup which would keep for any length of time, and constituted my vinegar "stock;" this, mixed with ten parts of rainwater, and fermented in the usual way, will furnish a vinegar of the greatest strength, purity and flavor. It takes about one year to make a prime article of vinegar by the natural process, but it is easily and cheaply done and gives a product which commands the highest price in the market.

I wish to suggest a word of warning in feeding the skimmings to the hogs: they must not be allowed to become too sour. I had a little experience of that kind once which I will relate. I had given instructions to my men to feed skimmings regularly to the hogs and not to let them stand too long; they let them stand forty-eight hours and then fed them. The result was what might have been expected; you never saw a more drunken set of animals! Three of them were dead drunk, so much so that they never recovered, but the rest of them came to. It was simply because the alcoholic fermentation had set it, and feeding it then had simply made the hogs beastly drunk.

Mr. Ditus Day, of Farmington. I would say that I have had very good success this year in making syrup,—probably the best I have ever made. In regard to feeding the skimmings I have had a little experience; it was two years ago. I trusted a hired man to feed the hogs and when I came home one Sunday, (I had cautioned him not to feed too much,) I found two of the hogs—I had six of them—were so drunk that they couldn't move. One

of them never recovered, but the rest survived. I find that one needs to be very careful about feeding sorghum that is fermented too much, but when fed properly I find that the hogs fatten well.

Mr. Kenney, of our county, made 12,000 gallons or more this year. I met him the fore part of last month and he told me that he was going to Louisiana. There is a specimen of his syrup here. I have not brought a specimen of my syrup; I tried to draw some but couldn't make it run, and I was in such a hurry I didn't bring it.

Mr. C. L. Smith. I came up from Faribault with Mr. Kenney a short time since and he told me that his product this year was 12,000 gallons. He stated that he had sold 7,000 gallons at an average price of fifty-five cents per gallon, net. He made another statement that I did not exactly understand at the time, but Prof. Porter's remarks about sugar-making in Louisiana explain his statements about New Orleans syrups selling for seven, eleven and twenty-five cents per gallon. Mr. Kenney finds a ready sale for his syrup and he asks for it about what the merchants can readily get for it. He said that he found that the merchants generally didn't like to put his syrup on sale, and of this 7,000 gallons over 6,000 gallons was sold at retail. He stated that where persons had used it they were generally ready to buy more. The retailers do not like to pay fifty-five cents for what they would sell for sixty-five cents; they could make a better profit on the seven, eleven and twenty-five; but he says that year by year the retail demand for his syrup has steadily increased; he has sold more five and ten gallon lots than he ever sold before. They would come with a jug to have it filled and say to him, "We bought a little of you last year and we liked it first-rate; this year we tried some made somewhere else and they gave us some that was sour; if you have some like that last you may send us ten gallons." About the first of January he had sold about 6,000 gallons and he thought it altogether likely by the first of May he would be able to dispose of the balance of his crop. Now, his profits on his crop, not counting the interest on his plant, the machinery on his farm, etc., but the profit over and above the cash expenditures for labor to produce this 12,000 gallons, will be close to \$3,500; he finds it very profitable. I knew Mr. Kenney years ago when he was a poor man and before he got to making amber cane syrup. Now he is head and shoulders above his neighbors, and has made his money out of amber

cane. He has made money every year; 1883 was not as profitable as some years, but still he made a profit that year. His crop of last year I presume is the most profitable he has ever grown, and I may say that he is very enthusiastic.

Now, it seems to me, here is one great disadvantage that the amber cane industry is laboring under. Here is where this association needs to put in some work. Too many men are growing amber cane and manufacturing it into a very inferior grade of syrup. People who buy that low grade of syrup become prejudiced, from the fact that they only know of it in this crude, green, raw state. Now, then, if you can educate every man that is making amber cane syrup to make such syrup as Mr. Kenney and these other men here are making, then the increased demand for it will more than equal any quantity that you can produce. That is my judgment and that is Mr. Kenney's.

Prof. Henry. The gentleman's last thought I would like to enlarge upon for one moment. In our State we published the results of our work in pamphlet form, and published 5,000 copies. The second year we published 6,000. Farmers wrote for those reports; we sent them into your State to a slight extent. I had one letter from the rear admiral of the British navy at the Sandwich Islands, asking for a copy. We printed directions for defecating. We had a great deal of fighting to do. One man says: "I don't intend to adulterate my syrup by putting lime into it." One may ask what per cent of those making syrup were defecating. In 1881 not more than one per cent used lime. In 1882 the number increased. I think now that seventy-five per cent of the smaller manufacturers have begun the use of lime. Now, it seems to me that if your society is going to get out a report, that some simple directions that Prof. Porter or Mr. Kenney could give, which could be placed in your report, would be of great value. If you could assist the smaller manufacturers you should do so, and the main point to be secured is to drive out the poorer quality of goods, and if you make a move in that direction your society can do a world of good in the immediate future.

Mr. Smith. Have you ever made any experiments by saturating your lime with sulphuric acid?

Prof. Henry. No, sir; I have not.

Mr. Smith. Have you, Prof. Porter?

Prof. Porter. I have not. It promises good results. I don't see anything against it. It bleaches the syrup.

Prof. Henry. Our farmers are inquiring about the use of the bisulphate of lime, and will attempt, I think, the use of it.

Mr. Whipple. I would like to ask Prof. Henry one question; how much, in your opinion, does it improve the quality of the syrup for home consumption to use lime for defecation?

Prof. Henry. Well, I would say that it is this way: It is a question of taste. There are people that like that strong sorghum taste. When it is grown on ordinary land it is quite strong, but not so marked on sandy land. Some people like it, but as a general thing the market does not demand it. As a rule people like to have some acid left in the syrup for baking purposes. I should say that it injured it about fifty per cent.

Mr. Smith. I think the difference is about twenty-five per cent. That is, where the lime is used it makes that difference. That is, I think there is about that difference in the process used by Mr. Whipple and that of Mr. Kenney. I think it will make fully twenty-five per cent difference in the value.

A Delegate. I think if you do not know how to use the lime you had better let it alone. I know in Farmington that you cannot sell a barrel of syrup that has been defecated. But the syrup that Mr. Day makes, the crude syrup, will sell; everybody wants it. I say if you don't know how to use the lime you had better let it alone. It spoils it for cooking purposes.

Mr. Whipple. I believe that the most that has been said on the question is in regard to the commercial value and in regard to manufacturing on a large scale. One man remarked that the small growers did not dare to come here. Now, I am one of the small growers and I dare to come; and I believe yet that I am on the right track for a small grower. When you can convince me that I am wrong I will change. Now, it has been stated that the market demands a clarified syrup. I don't know but Minneapolis is an exception; I know that it is in a great many respects, but I think not in this, for I am told that it is the crude syrup they want. They can sell it to the bakeries and to the refinery men, and for family use; for table use they cannot sell anything but the crude syrup. It may make some difference in the quality of the syrup, but I claim that there is not twenty-five per cent, nor twenty per cent, difference in the sale of the two kinds. It is on the table here and I will leave it to anyone in the house, after he tastes it, to decide on his own judgment. In regard to raising and manufacturing I have a little different way from those that manufacture on a large scale. I

use everything that grows excepting the blades; I don't use them only to fertilize my land. I make use of the seed. In the first place I go in before I cut my cane and select my seed for the next year's planting. I tie it up in small bunches and keep it away from the rain, let it completely cure and take it off with a currycomb. Very many of our small farmers don't have a currycomb, and if they do perhaps they don't use it. When the seed heads are well cured I strike them across the top of an open barrel and thus thresh out and secure the ripest and best grains for seed. The other seed I cure in the field. Once in a while there is a season that it will mould, but generally it will cure. My process of gathering the crop is about as Prof. Porter has described; after cutting the seed I leave it in a pile until I get through caring for the cane; by that time it is cured. This year I have hauled some three or four acres of it and piled it up by the hog pen, just as I have cut it in the field, and the snow has covered it up, and we are feeding it every day to the hogs. It is a simple way of caring for it, but I find that it pays to feed it. A simple way to care for the seed is when you go into the field take your knife and with one blow you sever the seed, and it can be piled up in a bin after it is thoroughly cured; and I will guarantee that I can take a thousand bushels and have it keep as well as corn. I feed it to my hens in that form; probably it requires a little labor for the hens, but they have nothing else to do. I throw it in a heap by the hog pen and it keeps there. That is the way I put it under cover. If it is cured it keeps all right, but that which I have by the pen is not under cover. I think I can keep it as well as corn.

Gen. Le Duc. Suppose you put it in a corn crib, will it keep?

Mr. Whipple. Where I have mine there are some windows out and it was piled up in a heap there and here is some of the seed that I took out of the pile to bring here.

Prof. Henry. You put it in when it is dry?

Mr. Whipple. I get it dry and then it will keep. And then my *bagasse* from the mill, instead of burning that, I have plenty of waste wood in the woods there and that is cheaper for me to burn than the *bagasse*. I am also in the garden business and I would rather put it into the raspberry bushes to mulch the vines than to burn it. I am trying to make an estimate of the amount of berries from the same amount of ground with its use and without. I find there is a great difference. I find that there is a great difference in the yield of fruit and a better result secured

from that than from anything else I have tried. I have tried marsh hay for mulching, and corn stalks, but there is nothing that will keep the ground so moist as the *bagasse*. It packs down close to the ground.

Prof. Porter. While visiting one of the plantations below New Orleans and listening to the doleful complaints they make concerning the business, I saw some things that were worthy of note; and while this discussion has been going on I could not help thinking of a scene presented to me there. I saw them taking the *bagasse* by the load up to the levee and dumping it into the river. Right opposite to that they were loading up with Pittsburgh coal with which to evaporate the juice. There was cause and effect. They were using open pans and conducting the business in a most wasteful manner. All the profits going down the Mississippi River.

Mr. Whipple. I would like to state as to the manner that I care for my crop. I have a Climax, two-horse mill which I got in Wisconsin and a self-evaporator. I manufactured in twenty-six and a half days within a few gallons of 2,000, employing three men and two horses, which was all the help I had. I lacked only ten or twelve gallons of 2,000.

Mr. Ditus Day. I manufacture both ways. I defecate, and for cooking purposes I make the crude syrup. For baking, the acid in the molasses will have the effect of baking powder and it will make light biscuit. For table use and for general purposes they generally prefer the defecated article. In the market it will bring ten or fifteen cents more a gallon for the defecated; but there are others that prefer the pure juice. Last year I manufactured only 2,230 gallons, but four years ago I manufactured a little over 4,000.

Gen. Le Duc. What does it cost a gallon to make it?

Mr. Day. I cannot tell you exactly.

Capt. Blakeley. It is known to some of you that I have been conducting some experiments and have been trying to make some sugar in this State. In conducting those experiments we have been using in making sugar a process for thorough defecation. The syrup made at the refinery is not sold to the bakeries. They say it is the best syrup they ever saw but they do not want it. It has not got the acid in it. Acid is a necessity for us in our syrups, but we soon learned one thing that the syrups that were used in the refineries were not desirable for the bakers. That is information that the merchants all give. But they will

say it is the best syrup that ever came to the State,—that sugar-house syrup,—but I cannot get a sugar-house-price for it. Then the question comes up, how much money can I make in the use of that syrup and how much can I make if I follow the process of some of my neighbors? When they came to compare the two they found that the cheaper syrups on the whole made the most money. It was found that the syrups that had gone through the coal filtration and that were finished in the pan, brought about the same price as the common syrups made without defecation; in fact, those that were not defecated were preferred by bakers to the syrups that we made. There were a large number of persons, as a matter of course, who wanted these syrups and who sent to us to get them, and we would send them five and ten gallon kegs, and they were very sorry when we quit our work. As a matter of course, if we had continued as we had hoped to do, we should have had a market for those syrups from all parts of the State, simply because of the unquestioned purity of the goods, and next because they would keep “forever and aye.” Some think the syrups that have not the acids in them are the same, but if you had had the experience with them that I have had on sugar-house syrups you would not think so. I think there is no doubt but what some persons find it to their advantage to use syrups that have been defecated.

Our friend Kenney has adopted the plan of using sulphur. He has got what he calls a sulphur house; I have not seen it for some little time. I do not now remember exactly its arrangement, but my impression is that it is about the same as any other. The syrup after going through the defecating tank runs through the sulphur house, where it is bleached by the sulphur smoke.

The process used by Mr. Hughes, who is a sugar chemist, and one of the best I know,—a man who was raised in a sugar house,—is to use the sulphur in his preparation with lime, for defecation. He says it is not quite sulphate of lime, but it is so near it that there is very little difference. I think his process is a little better than what is called that of sulphate of lime; he is using it in making sugar, and he says he cannot make sugar successfully without; he might make some, he might make a pound or two to the gallon, but if the cane is well grown and thoroughly matured, you can get five pounds of just as good sugar as is in that white sample there, from a gallon of syrup. The gallon of syrup will be heavier than people usually make in their common products, because there must be a certain consistency to the granules.

Any of you who have arranged to make a few gallons of syrup can adopt this course. This is the explanation of the difference between what is called a commercial process of making sugar and syrup, and the usual process, which we may all use, in which a man may use lime or not as he finds to his advantage. As was said by our friend, if you don't know how to use lime you had better not try it; but it don't injure the syrup for the uses of most people. I could not use syrup that had acid in it. I am a little dyspeptic. So with a great many others. The nicest quality of syrup is that which is completely defecated, thoroughly pure; and that will not be white syrup, either. The generation now coming up, even men that are thirty years old, have been taught to believe that clear, white syrup is pure syrup, and is the best to use. Thirty years ago the Belcher refinery, of St. Louis, used to make a very fine kind of sugar-house syrup. The process took all of the acid out of the syrup. They had a very large sale for their syrup, and when they sent out a barrel of syrup, it had been put through a process which made it pure. I bought a barrel of that syrup, and I never troubled myself about its condition or character any more than if it had been so much water. Nobody ever heard of a barrel of it bursting; it was simply pure syrup. It used to bring in the market about a dollar a gallon, or eighty-five cents if sold by the barrel. That was unqualifiedly the best syrup that has ever been sold in the United States; but to-day there is no sugar-house man that makes that class of syrups. We made that kind in our refinery simply because we didn't have time to reboil the syrups. After it was ready to crystalize we did not try to get the last grain of sugar out of the syrup, hence our syrups were better than anybody would find in this market that came from the East, or which was brought here, and when compared with ours there was no comparison between them. We sent a sample of it to Prof. Moore, who is probably the best sugar chemist in America,—Gen. Le Duc is acquainted with him—he is the chemist of one of the largest sugar refineries in New York City. He said, when he looked at this sample: "There is no such article as that made in America, now." He says: "That is a very excellent class of goods; it is too good for the general market in competition with other syrups." It was like the old sugar-house syrup that Mr. Belcher used to make thirty years ago; it had a large proportion of sugar in it, hence the difference between the two. It is not that defecated syrup is not better, but if you want it for use in the bakeries, you want

it with the acid. That is the reason they buy New Orleans molasses in preference to any other, if they can get it. It is very difficult to get. There is somebody in the way of that barrel getting to market; they have a special use for it. Now people had not asked yet how to make glucose syrup, but they do find that the amber cane syrups are in their way in the market. It was said, very properly, that anyone would take the amber cane first; consequently they have a man down there who knows what the price of it is; he will bring that and the glucose together somewhere; and they have stopped talking about the pure, clear white syrup to the people, and they have stopped selling it now; it is not fashionable now; it is not exactly the thing that recommends the syrup in the market, and that is what comes of a large proportion of the amber cane syrup, and almost all of the New Orleans syrup in the market.

There is imported into the United States 30,000,000 gallons of syrup annually. There is produced in the United States another 30,000,000 gallons of syrup; hence there are 60,000,000 gallons of syrup which, in one way or another, is grown, and which comes from sugar cane which is sold and used in the United States.

The syrup which is handled in the Baltimore refineries is re-boiled. For instance, syrup is imported into the United States and is rated at fifty-six per cent of saccharine matter; that is, the kind of syrup they usually buy. It pays a duty of four cents per gallon. Our Baltimore friends take it and they boil it. There is no end to the demand for syrups in this country. We need not have any fear that in your day or in mine there will be enough to supply the demand of the people.

Now I want to say a word about the manufacture of amber cane syrup. My friend here, Mr. Smith, has very aptly said that Mr. Kenney was once a poor man. A great result to him was the discovery of the sugar in 1877. He became enthusiastic; he spent the last dollar he had or could raise to buy machinery. He went to work upon his process, and he said to his neighbors that they could grow cane for him and he would pay them so much per ton, and he has got his neighbors growing cane by the ton for him to grind. Now, his machinery has not been sufficient to work up all the cane that he has had; he had to have the cane piled up in the yard. I have seen the yard full of cane, and piled up as high as my head and higher, and some of it would have to stand there perhaps for weeks. He used to

pile it up in that way and put leaves over it, and he used to describe the manner of piling it. It was a necessity to do this, as he could not work the cane up as fast as it was necessary to cut it. He had to leave it in the field, but he lost very largely by that process. There is no question that those of you who are growing cane want to cut it when it is ripe, and you want to grind it, if you can, the same day it is cut, and run it right through and finish it right up. That is the best use you can make of it. You can get more syrup, and that is the best way to dispose of it.

The Rio Grande folks gather their cane say to-day, and tomorrow every stalk of it is through the mill. They will use up about two hundred tons of cane in twenty-four hours. They put it through the mill right away. They will stake out enough to make two hundred tons, to be cut at one time, and run through the mill within twenty-four hours. Mr. Hughes, the chemist, will go down and examine the product, and if he finds it is not fit to cut he will bring the men home; but when it is ready he will order the men to cut the cane and put the whole thing through as fast as possible. He tests it with the polariscope to see if the cane is ready to go through the mill. Hence they cut it from day to day, regularly, and make sugar as successfully as it is possible to do it. You can readily see that it requires instruction and practice for a considerable period of time to accomplish all this. For instance, the man that was at the vacuum pan when I was at their mill was an old gentleman from Germany. Mr. Hughes asked him: "How long have you run a vacuum?" His reply was, "Thirty-three years." He asked him if he had ever done anything else, and he replied that he had not. That man knew how to boil syrup. He knew when he looked at it whether he would get any sugar. He knew exactly every moment of time whether the process was going on right or not. Mr. Hughes knew whether the boys who had charge of the defecating room understood their work or not. He had two or three boys down in the defecating room attending to the work. They put in the lime and whatever preparation was necessary, and when the defecation was complete they would turn a valve at the bottom of the tank and run the sediment into the scum pan, and when the clear juice commenced to run they had an arrangement by which they could turn it off by a valve, and everything was arranged to work in a perfect manner; everything reduced to a system the most complete, — the cheapest and most practical way

of making sugar. Hence there was no trouble with it whatever. They have improved their process of manufacture within the past few years. They keep a number of hogs, and they have a train of cars which carries the *bagasse* and the seed to a convenient point in the vicinity of the pens, and the seed is distributed to the hogs, and they use the *bagasse* to make manure, and in the spring they usually have enough manure for one acre of land for each hog kept.

Gen. Le Duc. Did they tell you the cost of the sugar per pound?

Capt. Blakeley. Well, they estimated that it would not cost them over two cents per pound. The year I was there they told me they had sold seed enough to pay for the crop. They estimated the cost of putting the crop through the mill at a dollar a ton. Now those of us who know anything about this industry know that amber cane can be grown so as to make it a paying business beyond the possibility of a doubt. Mr. Collyer has said that sugar can be made for one and one-half cents per pound. Of course, in order to do this you want to avail yourself of all the products that come from the crop. Mr. Kenney is paying two dollars and fifty cents per ton for cane, and every man that is growing cane for him is making more money from that than from anything else he could grow.

I had hoped to see our friend from Wisconsin, Mr. Powell, here at this meeting. He has always been here, and he comes through cold and heat, and is one of the most enthusiastic men we have anywhere in the business, and is making money out of it. Last year he lost his cane, but it didn't dampen his courage one bit. He said, "If I had lost my corn, that would not be a reason why I should not plant more corn." This year he has done well with his crop of cane. I have sent to Mr. Powell for a barrel of vinegar, as I have become tired of using muriatic acid for vinegar. Such vinegar as he makes ought to be more generally used; it would be healthier than the vinegar made and sold in the market.

The policy that this State should pursue, and especially at the schools, and which should be pursued by my friend Prof. Porter, is that all the boys that he graduates in the school should be put through a thorough course of training, and let them become educated on these matters, and by so doing they will find their knowledge a source of benefit to them in the future. When they go home they can impart information among their neighbors,

and when they examine a piece of cane they will know something about how much sugar there is in it. The boy educated in our schools should be able to tell about these things. It is such information as this that is going to be utilized, and in due time the business of making sugar will be a successful industry in the State of Minnesota.

A delegate inquired as to the difference in the cost of making by the different processes described.

Capt. Blakeley. I think Mr. Kenney will make more money by the process that he uses than Mr. Whipple will by his process. The cost of refining is not very great, and is not over a quarter of a cent a gallon. That does not amount to anything, really. The knowledge consists mainly in knowing just when you have to put the lime in and when you have enough of it in; you may spoil it by overdoing. It is the practice of a little skill which is required.

Gen. Le Duc. The process is very simple with the use of litmus paper.

Mr. Whipple. Mr. Kenney got about eight cents more a gallon than I did. I make my syrup and sell it. Mr. Kenney was an old schoolmate of mine. He used to get seventy cents for his syrup while I got fifty-five cents for mine; but I think this winter our sales are just about equal. We have had a good deal of demand for the crude syrup. I may say this, that these syrups will keep the year around, and I have never had any trouble. There are people who have handled other syrups and have had trouble with them. A syrup can be made a good deal cheaper and sold for less money, but after they have had one or two barrels burst in their cellars, they usually conclude they don't want any more. I am satisfied that some of our wholesale dealers are using the amber cane syrup and putting it into their "golden drips." I made this year about 2,000 gallons of syrup in twenty-six days, counting my time for stopping, cleaning pans, and everything, with three men and a span of horses, and drew most of the cane from the field during the time with the same team.

Mr. Smith. The expense would be about five cents per gallon.

President Smith. I bought some syrup from the Faribault refinery and have some of it on hand now, and it is as good as when I bought it.

Mr. Smith. The syrup usually has sugar in the bottom after it stands for a while.

President Smith. I bought it in ten-gallon kegs and I found that it kept all right.

Capt. Blakeley. A man that takes the ten-gallon keg of syrup is not disturbed about its keeping, for if it is not made as well as Mr. Whipple's is, or Mr. Kenney's or Mr. Powell's, it will keep. But if there is acid in the syrup and you start to travel any distance in the hot summer season it is bound to work, and it will soon make itself heard before it gets a great ways; there is no doubt about that.

Mr. Whipple. I have shipped my syrup to Dakota and never had any trouble in that way.

Some think that the acid injures the quality but there is one good thing about it,—some of our physicians tell me that the amount of lime that they have in the syrups is of advantage and that it counterbalances the acids; I don't know but they are mistaken. If anyone knows anything about that I would like to hear what he has to say.

Capt. Blakeley. No acid is necessary for me. I use the greatest care in my food in order that I shall not have any acid. I don't use it. I don't use even the vinegar that I bought from our friend Powell; but my family use it. It is because I have an abundance, and more than enough. There are plenty of people who require acid, but this is because of a difference in our systems. The instructions from the books are, as well as that of the best chemists of Europe, that you must get rid of the acid if you are going to make good sugar. What I am urging and what I think we must look toward developing ultimately in this country is the sugar industry as well as the product of syrup. We are all able to make syrup. There are many in the State who know how to do it and can make money out of it all the time; but one more step is necessary,—it is practical to make sugar in this State for two cents a pound, as I believe Gen. Le-Duc will tell you, and as Mr. Collyer has told us, and he is indorsed by the Academy of Natural Sciences of the United States.

There is probably no better authority on these subjects in the United States than Dr. Moore, a man who gets \$25,000 per year for his services as sugar chemist. He unqualifiedly indorsed the whole thing. Not only that, but I had an extended conversation with Prof. Silliman, in which he expressed himself as not only gratified, but astonished, at the result, and they both believed it would be a success at that time. Prof. Silliman and Prof. Brewer

were very enthusiastic. Gentlemen, this is not a delusion; it is the truth. All you want is the necessary information in order to enable you to make the most beautiful sugar the earth has ever produced, and it can be done on the broad prairies of Minnesota. Our friend Prof. Henry knows all about it. He tells you that over in Wisconsin they have made sugar, using a little pan, about thirty inches across; and according to their estimate it only cost them about four cents per pound.

I want to say a word about beets. In 1747 A. S. Marggrof, a German chemist, declared that there was some sugar in beets. It went for sixty years before his statement was confirmed by one of his scholars, K. F. Achard, in 1799, who presented a sample of sugar to the Institute of France.

The Institute of France and other chemists continued experiments confirming Achard's statements up to 1810, when it had become a necessity because of the war between England and France that some means should be devised to procure a supply of sugar for France. When this subject was again taken up by M. Proust, an able chemist, who made sugar from grapes, and M. Fouques, who found a means of bleaching it and giving it the color of cane sugar. This new and interesting progress in development of the discovery of Messrs. Marggroff and Achard was brought to the attention of Napoleon by his minister of the interior, and his majesty issued a decree that there should be granted M. Proust \$20,000, and to M. Fouques \$8,000, to establish this industry, and made M. Proust a knight of the Legion of Honor, and on Aug. 18, 1810, the minister of the interior addressed the prefects of the different departments of France on the subject, urging them everywhere to establish this new industry. The closing paragraph of this letter of the minister was as follows: "Let manufacturing establishments multiply everywhere. Let it be considered, M. le Prefect, that this is a sort of war we are making against the enemies of the continent, and which his majesty considers, more than any other sovereign, worthy of recompense to those who make themselves prominent in the ranks." This is the way the beet sugar industry began, and all the world knows what it is to-day; and sorghum only wants a similar friend behind it to have a still more complete success.

Prof. Henry. You have not told how when Napoleon fell the price of sugar fell. That is an important consideration in looking at the history of the industry in that country.

Capt. Blakeley. When Napoleon fell the people of France soon learned that it was necessary to protect them by law. They found that the cheap sugar of India could be made and sold for less money than they could make it by the use of beets. But they "walled up" the industry, gentlemen. It costs to-day eight cents a pound to get sugar into France or into Germany; but you can get it out for a good deal less money. That is the secret.

Prof. Henry. We hear to-day about some of the sugar factories going to the wall. It is said that after Napoleon's downfall all of the sugar factories of France went down but one. They gradually started up again and to-day, with a protective tariff, they have between four and five hundred sugar factories in France. We find a parallel in our own history in reference to the business of sugar-making.

Capt. Blakeley. Sugar cannot be made at the prices at which it is being sold. It is simply like selling wheat at twenty-five cents a bushel. So it is with corn. We cannot get its value when we have to burn corn. It will always cost a certain price to raise it, consequently it must be worth that; and so it is with sugar. The people of Germany are as much in trouble as anybody else about this matter. Their sugar business is with them a national industry; it involves millions of dollars, and there are thousands of people engaged in the business. It is indispensable as a rotation crop. They get a large amount of feed from the beets for their cattle, and they get a large amount of manure for the land. It is almost indispensable as a crop for rotation.

This is one of the theories of the growth of the sugar interests of this country; and because of the difficulties that are to be overcome there should be an earnest effort to bring to bear all the practical knowledge that can be gained, and all the skill and adaptation of one part to the other that is practicable. I might say here that there is one institution in France, a sugar mill, that has forty-four miles of pipe that carries the juice of the beets from the different farms all around that plantation to the factory. The beets may be grown away over here or away over there, but the product is conveyed to the mill by these pipes. They send out word when the supply is to be sent in from one locality to one man, and then at another time send word to another, and so on. It would be utterly impracticable for the teams to get to the factory with the amount of beets which are manufactured into sugar and supply it with the amount of mate-

rial necessary to run it. There are fifteen hundred men at work in the factory, and there is not a beet brought to it. You have no real conception of what an immense industry the beet industry really is until you commence to study it. But I have taken too much of the time and you will have to excuse me; I am a little enthusiastic about sugar and don't usually know when to stop talking.

. A delegate here inquired if there was any way of disposing of the *bagasse* so as to use it to advantage as fuel.

Prof. Porter. I have seen a machine in operation on some of the plantations in Louisiana that takes care of the *bagasse*. There is attached to the crusher a carrier with an endless chain and it conveys the *bagasse* away very much like the straw carrier to a threshing machine. In the passage it becomes so dry that it will readily burn as fuel. There have been a number of inventions brought into use for disposing of the *bagasse*. Anyone who desires a fuller description can send a dollar to Mr. Colman as a subscription to Colman's *Rural World*, and that will give one a great deal of useful information. It will be the best investment he will ever make for one dollar if he ever expects to become thoroughly posted in sorghum culture and manufacture.

Mr. Whipple. I will say that after reading that journal for several years that you will find out by that how to get rid of the *bagasse* as well as obtain much other useful information.

Capt. Blakeley. It is the organ of the amber cane interests of the Mississippi Valley. Mr. Colman has almost always been to our annual meetings. I wish to say that I attended the meeting in Wisconsin two years ago and was well repaid for going. We had a remarkably interesting session. There were a great many present who were well informed in regard to this industry. We were all gratified at the results which were shown to have been accomplished thus far. We felt that we had made an advance that was beyond a question. The report that was made of the meeting was a very correct one; we had a good reporter, who made a very accurate report of everything that was said. There were a good many interesting items of information contributed by the different persons who met upon that occasion and many valuable suggestions made. I have sent to every member of our association a copy of the report so far as I knew them by name. I have still a few copies left. I have no doubt it has been a source of profit to many, for all these things were very carefully discussed in that report.

Gen. Le Duc. In regard to the burning of *bagasse*. If you have a machine that will split the cane and get the juice all out, and have a good chimney of brick, you will be able to feed the *bagasse* directly to the flames so that it will be practicable to run your furnace. There is no doubt of that; I have seen it done and have done it myself. The great question before us here now, and before those who have assembled year by year to discuss sorghum matters is, I think, *what shall we do to make some money out of the sorghum?* That is the practical question that lies at the foundation of all the interest that we take in it. But there is a broader question than that and one that lies at the foundation, and that is what shall we do in order to produce in this country everything that can be produced by American farmers, rather than to use those things that come from abroad, produced by some other country? We will surely profit by this. Even if we seem to be making no money, still if we work within ourselves to supply our own needs we as a country are making money out of that. This was a question which came to me in my official position: How can this country save to its people that great amount of money which is flowing away to other countries?

In that country that I told you about I had a good deal of communication with the people. I was in the country that Prof. Porter has told you about. I had with me a sample of Minnesota amber cane sugar. I had a bottle of syrup made by Mr. Kenney, and after they had gotten through with their congratulations we fell into a discussion. They said, "This is open pan work?" I told them, "Yes, I believe it is." "I suppose it was some that was made in Texas or in Georgia?" "No, it was not made in Georgia." "Where was it made? It was not made of cane?" "No; it was made out of a kind of cane; it was made in Minnesota." There were there twelve gentlemen at the time; men who had spent their lives at the business, and some of them who had fortunes of \$250,000 each, perhaps, invested in sugar mills. They looked at it again and again and they said, "It cannot be possible that you are telling us the truth!" "Yes," I said, "that was made in Minnesota, and it was made by a farmer, and it was made in open pans." "Well, by the gods!" said one of them, "we are done, boys, we may as well stop!" and they sat down and stopped and looked, as much as to say, "these Yankees up North are going to beat us to death!" They knew the kind of labor we have to do our work and that they

could not compete with the intelligence of Northern people. They knew that if sugar could be made by a farmer of Minnesota without expensive machinery, without the centrifugal and the vacuum pan, that we could make it cheaper than they could. I tell you that sugar can be made for less than a cent a pound, paying all expenses, under favorable circumstances. Their sugar at the Rio Grande works does not cost them a cent a pound to-day. They have reduced the expenses and placed them elsewhere so the sugar don't cost them a cent a pound.

Capt. Blakeley. Have you seen the Rio Grande works since they have adopted diffusion there?

Gen. Le Duc. No, but I have kept up with that. The question comes up to me as it has with Prof. Porter, which is this: Is not this treaty with Mexico going to be prejudicial to our interests in making sugar in this whole country? The professor was not in when I was telling about the kind of people they have down there. The people with their present degree of intelligence down there will never be able to compete with us of the United States. It is not because they have so fine a soil that they may be enabled to excel, for that is only one item in the account. Their land for sugar-making is limited. The greater portion of the area of their country is not subject to the rainfall which is necessary to the growth of a crop of sugar; their sugar cane must go ten, twelve, or fourteen months before it is cut. The rainfall there depends largely upon the travel of the sun to the north, with an atmosphere that brings moisture. Instead of the tropical rains there is drought for six months and then practically rain for six months. That affords a very small area in which to grow sugar. You cannot make sugar there in a dry season without irrigation. As the world grows older the increase in the amount of sugar is larger than the increase of population. That is because sugar takes the place of other kinds of food; it takes the place of meat in a large degree. The population of Mexico will need the increase in the sugar for the next ten or twenty years. In the next ten or twenty years, if the people of this State will put themselves to work as they ought to, and if this State will encourage this industry as it ought to do, there is no question or doubt that you people will be enabled to raise your own sugar as you may your own grain. It may even be one of your large exports. I say this in all earnestness. I say think of it and study it, and do so with the purpose of making your money out of it. I should like to see this crop cultivated as a leading industry of the State

and one which the fertile soil of ours may produce in such an abundance that we might have a surplus to send abroad.

Mr. Day. If there is no further business I would move that we now adjourn.

The motion was carried, and this closed the transactions of the Amber Cane Association.

EVENING SESSION.

WEDNESDAY, JANUARY 21, 1885.

The meeting was called to order at 7 o'clock P. M., by President Smith. He called attention to a beautiful collection of flowers presented by Mr. William King, of St. Paul.

President Smith then introduced Mrs. Anna B. Underwood, of Lake City, as the pioneer orchardist of Minnesota, who proceeded to read an essay upon apples.

The following is the paper read:

ORCHARDING IN MINNESOTA.

BY ANNA B. UNDERWOOD.

Mr. President, Ladies and Gentlemen:

Your committee asked me for an account of my orchard, and the labors connected therewith, and it gives me pleasure to contribute to our society's program in this way.

Although cognizant in a general way of what had been done in this orchard from its first planting, I only feel qualified to speak particularly of its management and results since it came under my control. This orchard has always been the pet of the family, and, like most pets, it has given its natural guardians considerable anxiety, connected with hard work, to properly guide its growth into a fruitful maturity. The most favorable situation for an orchard is generally conceded to be on a high northern exposure. The location of this one has always been regarded as unfavorable, as it is on a flat bench of land where it gets the full force of the sun in summer and in winter, which makes the temperature more variable than it would be on a high northern slope.

Owing to the pressing duties connected with the nursery busi-

ness the orchard had not been as well attended to—particularly in one respect—as it richly deserved. Aside from this (which will be referred to again later on) it had been well looked after, amply repaying the time and money spent upon it. The cattle—which in many orchards are permitted to roam around at their own sweet will, doing all the pruning and cultivating that is ever given—have never been turned in to browse around the trees; neither has the sod been allowed to grow between the rows. From the time the trees were first set out, they have been thoroughly cultivated each season in the rows running north and south. While the trees were young and until the ground was too heavily shaded to do it, one row of corn or something else has been grown between the trees. This last season I planted raspberries and blackberries between some of the orchard rows, hoping to gain protection for them. At the same time the cultivation necessary for their growth will be beneficial to the trees.

The soil is a sandy loam with a clay subsoil and is really a genial home for the roots of trees, although our hot August suns cause it to mature the fruit early, and make it difficult to keep. The situation of the orchard has one element that is both desirable and objectionable, and that is a free circulation of air, but when it comes to us in the latter part of August with a force that precipitates to the ground two hundred bushels of apples a day for three consecutive days, we think there is a "leetle too much air stirrin." It is at such times, too, that the sun shines so hot as to literally bake large Duchesses as they lie on the ground from 10 A. M. to 2 P. M., and we can only hurry them in to a cool place to be sorted and disposed of as best we may. But I fear you will think that I am describing a poor orchard, poorly managed, which certainly is not the case. For while it is yet but a young orchard, the greater part of it having been set but nine years,—the balance one, two and three years later,—I have for the past two years marketed forty to fifty dollars worth of apples per acre to say nothing of fine returns from it before that time. Most of the trees are set 12x14 feet, the rows being fourteen feet apart. The largest portion of the orchard has been seeded down with clover, that is a strip about four feet wide in the row. Clover is better than other grass, as, owing to its branching, spreading habit, it is more yielding to the falling fruit. For another reason it is the best, and that is its fertilizing qualities. It also makes good mulching for the trees.

There are in all between 4,000 and 5,000 trees in the or-

chard, about three-fourths of which have borne more or less fruit. The varieties are mainly Wealthy, Duchess and Tetofsky. Next in quality are the different varieties of the hybrids; then in small lots are a number of semi-hardys, such as the Haas, Walbridge, Drake, etc.; and finally, to close the list, is an experimental orchard of several Russians and Minnesota seedlings that are undergoing the test for hardiness and quality. A great many of these have been found wanting, and another season the trees will be top-worked to some other varieties. It rather dampens one's pomological ardor, after growing for three or four years a cion of some apple with a name of several syllables, indicating that the fruit possesses all the qualities that the apple should, to find that the fruit has the same delicate flavor and fine grain (and I was about to say size) as an acorn! We have several worthy varieties now, like the Wealthy, Duchess, etc., and it seems to me that a certain scale of points ought to be decided upon by which new varieties should be tested before throwing them broadcast over the land to load our orchards with unprofitable varieties.

The Duchess orchard has had a vacation for the past two seasons. In the spring of 1883 there was a severe frost that killed the blossoms and young apples. It was quite interesting to note the susceptibility of the different varieties to this late freezing, the best to stand it being the Wealthy and Orange. This last season not over fifty bushels of apples were gathered from the Duchess orchard of about 1,400 trees, that should have produced as many bushels. This fruitlessness I attributed to a tremendous down-pour of rain just at the time this variety was in full bloom. Most of the hybrids suffered by the same fall of rain. The Wealthy, blooming a few days later, were heavily loaded with fruit, constituting the main crop of the season. I think I made a mistake in allowing them to fruit so heavily, for by the time the last barrel of apples was gathered the Wealthy trees looked very tired and weary, which was not to be wondered at, considering the quantity of fruit they had borne. The Duchess, standing by the side of the Wealthy, looked so strong and vigorous, thoroughly refreshed and ready for their coming winter struggle, that I then and there resolved I would not again overwork a tree that I cared anything for. Another season will try what systematic thinning will do. It requires the free exercise of all the courage and will power a mortal is capable of to deliberately destroy a third or half of the fruit after it is set, particu-

larly here in Minnesota where we have to submit to the idiosyncrasies of our spirit thermometers, which will persist, in spite of all protestations and ejaculations, in registering all the way from fifty degrees above to forty and forty-five degrees below during twenty-four or thirty-six hours, and not only once but two or three times during a winter. These sudden changes are liable to destroy the fruit buds, and when, after a fruitless season, the trees are once more set full of fruit, it is a great temptation to let every one grow. But the tree will winter better if it has been kept in good growing condition and not stunted by bearing too heavily. The trees have been pruned but little; when a branch seemed to seriously interfere with another it was removed, and this, with the cutting of cions for grafting, has been all that was necessary to keep them in good shape.

There were several weeks this summer of very dry weather, that militated strongly against the size and quality of the fruit. An occasional cloud would bring hopes of a thorough soaking, but it would leave us with hardly enough moisture to lay the dust. Quite often it would be accompanied by heavy winds that would threaten to uproot every tree. Sometimes the apples would present a bruised appearance on the trees. As a consequent result of this lack of moisture, high, drying winds, etc., there were a great many undersized immature apples that were useless for any purpose.

In gathering the apples from the trees I used bushel and half-bushel baskets to pick into; when full they were carried to the ends of the rows, and from there were carried to the apple shed on hand-carts. The utmost care and watchfulness had to be exercised over the pickers in order to have the apples laid in the baskets and not thrown in. Even after explicit directions had been given the picker relative to the proper handling of fruit, the reasons therefor given, and in addition, the fact, demonstrated by actual illustration before the eye, that an apple will not stand without injury the same banging that a stone will, the picker was occasionally unable to resist the temptation to save a few steps by giving an apple a toss of a foot or two, although he well knew that by so doing not only the apple thrown but the two or three hit in its fall were more or less bruised. These bruises would not show at the time, but eight or ten hours would develop ugly black spots that would condemn them at once as first-class apples in the eyes of purchasers. When wanted for shipment, if to go by express, the apples were carefully sorted

and placed in bushel baskets, the covers pressed on firmly to prevent shaking of the fruit. Then a lath was passed over the cover of each and through the handles to keep the cover in its place. Apples were only sent to near markets by express. If they were to go long distances they were just as carefully sorted and packed in barrels, and sent by freight.

In spite of all the difficulties of the past season, and failure of the Duchess to bear, I marketed about 1,300 bushels, and could have sold as many more without any further effort, as the demand far exceeded the supply. Our Minnesota apples, particularly the Wealthy, are so highly colored that they find more ready sale in market than the Southern grown ones, and we all know that there is no apple grown anywhere that excels the Wealthy in beauty or quality.

The first of August found the Early Strawberry ready to be gathered. This hybrid, coming as it does right after the raspberries are gone, is especially desirable, as at this time fruit of any kind is very scarce in the market, and every housekeeper is wondering what she will have for sauce, pies, etc. When ripe, owing to its mild, sub-acid flavor, entirely free from bitterness, it is a delightful little apple to eat out of hand. A fruit dish filled full is a nice ornament for a parlor table, well appreciated by callers, who, after trying one of the "crabs" at your earnest solicitation, are so surprised to find "that it tastes as nicely as any apple," and they need no further urging to eat a dozen more. It really hurts my feelings to have people persist in calling this hybrid, with some others I might name, "crabs;" for the name "crab" alone will pucker one's mouth before a bite is taken from the fruit. I will here give a way of cooking this hybrid, which applies equally well to the Orange, that I find is not generally known or used, most everyone thinking they are only fit for jelly and pickles. Put the apples whole, without stemming, coring or paring, into a saucepan, with enough thin syrup to cover them; let them cook slowly until done. The juice will be of a delicate pink color; then pour them with the juice into a sauce-dish, and when thoroughly cooled they are ready for the table, and a most attractive dish it is to look at and to eat. Some sprinkle a little cinnamon over them while cooking, but their own sprightly flavor is the best, in my opinion. The Duchess, what few I had, came directly after the Early Strawberry. This is a fine market apple, as, on account of its high color and size, it is very attrac-

tive. Its only fault is, when fully ripe it does not stand shipping long distances well. For near markets it is splendid.

The Wealthy begins coloring up about the last of August and the first of September it is ready for market, and from that time on, as long as you have any on hand, it is *the* apple—although I did find one person last fall that preferred the Haas for eating!

I would like to speak particularly of the Orange. This hybrid, when mature, is of a bright orange color. Jelly made from it is very light colored and better flavored than when made from the crabs, as it is entirely free from bitterness. Cooked in the manner described above for Early Strawberry it makes a sauce, as the girls say, just too lovely for anything! The bright, orange color of the skin is not affected by cooking; the juice is perfectly clear, and it really makes a very dainty dish. It is very juicy, never getting dry and mealy, and when fully matured is pleasant eating. This is a popular hybrid in our city, and this season did not have enough to supply demand. Other seasons have put away one or two barrels for winter use, but had to let the last bushel go to fill orders this year. Winter before this we used the last some time in February. Presume they would have kept longer, but there were none to keep. The Orange, Early Strawberry and some others of the hybrids have such thin skin that they do not need paring, which is another feature making them especially desirable.

A few words about Beach's Sweet. It is a delicious, sweet apple for eating, and for canning it is equal, we think, to California pears. They want to be pared and cored whole with a small knife or apple-corer. Steam them until tender, then put them in the glass cans, and while warm pour over them a thin syrup, scalding hot, filling the can and sealing at once!

There are other varieties that I would like to mention particularly, giving their good or indifferent qualities; but my time has been too limited and it would take too much of your patience to listen.

A little while ago I said the orchard had not been well attended to in one respect. The trees, although in such an exposed position, had never been protected in any way. The necessity for it has been realized for many years, but lack of time to give it the personal attention required has postponed it from year to year. A serious injury the orchard has experienced has been from the sun during winter. This is indicated by the injury being only on the south side of the trees, and the trees at

the south end of the orchard showing more hurt than those further in.

All the season through this was the subject of many consultations with different persons. The main object desired was to secure a protection that would combine cheapness, durability and efficiency.

As soon as the apples were all disposed of, which was about the last week of September, preparations were at once begun to get the trees ready for winter. First the bodies were cleared of all dead places, loose bark removed, where the water might stand; all dead limbs cut away. After this each tree was gone over carefully and thoroughly waxed where any whittling or scraping had been done. Also the crotches of the main branches were waxed as far as they could be reached conveniently. During the operation of scraping and cleaning, a great many eggs—of what I know not—and worms of different kinds were unearthed and destroyed.

The next step was to obtain lath and binding wire. Five or more laths, according to the size of the tree, were then woven together, about ten inches from each end, with the wire. The ends of the wire were left long enough to complete the distance around the tree and fasten loosely. These shields were then placed on the south side of the trees. The cost of these shields, including the wire, time of making and putting on the trees, was a trifle less than three cents per tree. The cold weather came a little too soon for me, as I intended to further protect the trees by laying bits of burlap on the south side of the larger branches that the shields could not cover. Another fall will see that this is done also, for the more perfect the protection we can give our trees from the winter sun the better their condition at the opening of spring.

One word with regard to the worms in the apples; they are increasing every year, and unless some radical measures are taken to prevent their increase our orchards will soon be worthless. London purple has been recommended to me as being the best preventive, and this coming spring I intend to use it thoroughly. Secretary Gibbs gives the best method of using it, in the report for 1884.

The paper of Mrs. Underwood was received with applause.

President Smith inquired how many apples Mrs. Underwood had sold from the orchard in the year 1883.

Mrs. Underwood. If I remember rightly either 1,400 or 1,500 bushels, making in all about 3,000 bushels in two years.

Mr. Smith moved a vote of thanks to Mrs. Underwood for the valuable paper furnished the society and that she be made an honorary member for five years.

Mrs. Underwood. I believe I would rather object to being made an honorary member, for I would prefer being an active member of the society.

The motion to tender her a vote of thanks for the paper, and that it be published in the report of proceedings was carried unanimously.

Mrs. Ida E. Tilson, of West Salem, Wis., then read a paper upon "The Relation of Poultry-raising to Horticulture." The reading was listened to with close attention and received with applause.

THE RELATION OF POULTRY TO HORTICULTURE.

BY MRS. IDA E. TILSON.

There is an old newspaper joke which claims hens, like plants, are set, and eggs resemble roses, being propagated by layers. This paper, however, proposes to treat its subject in real earnest. Neither horticulture nor poultry-raising requires large capital. A little money buys many seeds or fowls. Either business is most practicable on small areas. Poultry cannot range like stock. A few acres of fruits and vegetables, with their constant weeding and cultivation, are equivalent to the demands of a whole farm planted in coarser crops. It is therefore surprising that he who has a small capital, a small farm, or both, does not oftener combine two such harmonious industries. When statistics of either business are considered, it is equally strange that men will risk new country privations to secure large farms, instead of subdividing old lands in settled communities, and trying these remunerative employments. A late paper estimates the French eat, on an average, one hundred and fifty eggs apiece each year. In the United States about \$30,000,000 worth are annually consumed. Not long since, some statistician astonished one of Wisconsin's well developed counties by proving its horticultural products had, that season, netted more than its combined stock and dairy interests.

Often two crops, fruits and fowls, can be grown in the same enclosure without detriment to either, but, on the other hand, with great advantage to both. If a flock are, in number, pro-

portioned to the size of their run, they will cultivate the ground well, allowing no hard crust to form on its surface, nor weeds to flourish, and will tear apart, pulverize and work up into a compost all sorts of old rubbish. Biddy's worst enemies admit she can do that to perfection. Many grubs and insects, conveyed to vegetable quarters and flower beds in fertilizers, are found and eaten. All this while the birds themselves are enriching the land. The guano of commerce not always comes from Peru, but sometimes has its origin in American poultry yards, and is all the better for that, as chemists think no fertilizer is superior in condensed strength to this home-made product. Can earthworms, so praised by naturalists, do more than Biddy has done thus far? Then is she not entitled, when warm weather comes, to sit under shelter, so to speak, of her own vine and fig tree? Trees and plants afford a sure protection from hawks. Poultry need shade for comfort, and, throughout the year, green food for health. Undersized and injured vegetables, of all kinds, seem to suit their tastes and constitutions quite as well as sounder roots. What horticulturist hasn't unsalable produce, a dead loss, except as swine or fowls transform it? If this subject were a little broader, agriculture instead of horticulture, the market fowls make for cereals would be an important consideration, also their utilization of screenings, etc. The chemical constitution of a soil is believed to affect the color of their plumage, not so much by direct contact, as through the digestive organs and blood, because they eat not only vegetation growing out of this soil, but more or less earth itself. A variety and abundance of mineral matters produce dark and vivid tints. Lime and phosphorus tend to symmetry of form and vigor in carriage. Ammonia induces sprightliness. Gardens are yearly enriched with fertilizers, both natural and manufactured, which contain these very elements, and such situations cannot but prove favorable to producing high-bred poultry.

Horticulturists wage constant war on insects, and make a large annual outlay for powders and other compounds to destroy these pests. But the *New York Tribune* says: "London purple, Paris green, and other deadly and enduring arsenical preparations may well be included in the black list. It is time honored entomologists ceased to lend their influence in favor of such perilous stuff, which, recklessly scattered as it is in immense quantity, poisons the land and the fountains of life." The *Rural New Yorker* unites in this protest. Not that any person or many animals

have actually been fatally poisoned, but, as in adulterations of sugar, syrups, etc., injury is no less because it comes on gradually and insidiously. Insectivorous birds and animals, on the contrary, are natural and safe allies for horticulturists. Prof. King, of River Falls, who has examined stomachs of many hundred birds, thinks not more than thirty-five per cent of the robin's food is fruit, and, therefore, commends this generally distrusted and persecuted bird. As fowls are usually made to fast a while before being killed for market, it is difficult to determine just what proportion insects form of their food. An acquaintance tried, by dissecting a number of sick individuals, to learn the secrets of some mysterious malady visiting her flock. She was surprised at the large number of familiar insects found in the crops even of these partially disabled hens. At least cherries, raspberries and blackberries grow out of reach of fowls, and it can fairly be inferred they destroy less fruit than robins do. Let a few additional plants be allowed for them, and they will save all from overbearing, a thinning out by hand not often being practicable. Moles have many friends, and toads are a regular article of commerce, being imported to England from Denmark at the rate of five dollars per hundred. But moles frequently eat off roots and make unsightly mounds of earth. And finally, in the comparison of merits, domestic fowls cannot fail to outrank wild birds and insectivorous animals, because, unlike all others, they are themselves a source of profit. Here again is reverse action. With insects or some other meat for food, an extra production of eggs may be expected.

A list of such injurious insects as poultry are actually known to eat will add positiveness. A friend has called my attention to the Illinois Horticultural report, of 1883, on the chicken remedy for sorghum plant louse, and the Michigan Pomological report, of 1877, on the same remedy for curculio. Not only plums, but apricots, peaches, cherries, apples, pears and quinces are attacked by curculios, hardly a fruit escaping if these insects are abundant. When plums are about as large as peas, the curculio stings them, making incisions in which she deposits her eggs. Fruit, weakened by the gnawing of the grubs which hatch, falls before ripening, but by this time its grubs are ready to pass through other changes.

Prof. Kneeland, of Boston, says poultry running about the trees will devour many larvæ before they can enter the earth. Full grown insects, shaken from a tree or disturbed, remain

motionless, feigning death for a time, when possibly, they might also be discovered and eaten.

Prof. Sturtevant, of the State Experimental Farm at Geneva, New York, placed a dozen hens in an inclosure of fifty trees. Only three per cent of plums were stung, while all outside were ruined. Pea weevils proceed in a similar way with half-grown pods. In a row of peas, where I had discovered these pests, not one could be found after some hens had investigated them, and a fine crop resulted. It is generally admitted that crow, blackbirds and Baltimore orioles devour great numbers of these weevils. So many have actually seen poultry eat potato bugs, especially young bugs, their names would make too long a list, though among them may be mentioned J. C. Plumb, of the *Western Farmer*. Cut worms remain under ground by day, and their only effectual preventive is frequently to dig about infested plants and kill what worms are found, surely a suitable work for chickens; and Secretary Gibbs, of this society, testifies he has had several hundred strawberry plants thus cleared of worms. He also mentioned a neighbor who bought five hundred or more plants from him, and gave his chickens full range among them. They were free from the leaf-roller's ravages, while Mr. Gibbs' own plants, not so cultivated, were injured. Wire worms are often hurtful to wheat and garden crops, including strawberries and potatoes. I cannot please my hens better than by disclosing a haunt of these insects, unless indeed, I gather the worms myself and feed them out in a mass. If the biddies cannot, like Oliver Twist, call for more, they look their appreciation. Snails and slugs are less common here than in European gardens, where, on the authority of Appleton's Cyclopædia, they are often too numerous, and the matter is remedied by fowls. Angle worms, in great numbers, sour or poison soil, and no one of any experience in gardening can deny hens' fondness for them, nor for that famous corn and grass destroyer, the white grub, as well as for grasshoppers, which also become formidable through numbers. Biddy will trudge behind a plow half a day at a time, devouring grubs thus brought to the surface. President J. M. Smith, of the Wisconsin Horticultural Society, is as noted for his fine currants as for his leniency to hens. The late Mrs. Lewis told of a friend in Mazomamie, Wis., whose roses, free from slugs, are a perpetual wonder. Their owner, however, divides all compliments with the feathered helpers. I have seen poultry eat bee, wheat, and cabbage millers, and in fact various others,

which I have not identified. This is an important consideration, for all kinds of plants and trees, fruits, grease, meal, clothing, carpets, and furs are subject to the ravages of moths. Any warm sundown, when millers are flying about, young chicks with all youth's enthusiasm, may be seen chasing them. A hen will stand motionless over a cabbage plant half an hour, Micawber like, waiting for a miller to happen along. Such an authority on Southern horticulture as ex-Commissioner of Immigration Dr. S. French, of Florida, expressed to me his high valuation of hens in orange groves.

Training doubtless will avail much. A friend tells of a pet cockerel that came at his call to dig for worms. A hen of mine, Twilight by name, was equally acute. Another, Gertrude, having been fed many wood-grubs, to this day lingers about wherever she hears an axe.

A correspondent of the *Country Gentleman*, in an article which has been widely quoted, rather sneers at the guess work of those who praise fowls for fruit protectors. I have, therefore, made my statements as definite and minute as possible, and extended my observations and inquiries through more than one season. He has, for instance, repeatedly offered his hens curculios, which they would not eat. That there might be no failure to see them, he laid his specimen beetles on a white plate. Now you are all witnesses that hens are not accustomed to dining on china. Where one bird would catch the idea of such an experiment, ninety-nine would stand agape at the man's maneuvers. That I might demonstrate his folly, I have served their favorite angle-worms, white grubs and crickets, in style, on plates. Only one or two of my flock, and those known to be especially bright and aspiring individuals, would partake. Insects eaten freely in their own way and time, they are generally too startled to notice or accept when thrown at them. Such is not a fair test, either, for those friendly and helpful bugs which horticulturalists do not wish destroyed.

To know positively what animals do not eat, would require an almost omniscient eye. Under a great variety of circumstances, I have known these birds we are considering, to pass unnoticed or to refuse the valuable lady bug, destroyer of plant lice and potato beetles. A lady friend, a great lover of gardening, sustains me in this statement. Man can hardly estimate the benefits conferred on him by the little ichneumon flies, which keep in check gall insects, Hessian flies, caterpillars, potato worms and

a host of others. But these flies are very rapid flyers, and taken with difficulty. I have never seen fowls attempt their capture, although they are so common. Prof. Trelease of the Wisconsin University, calls the golden-eyed or lace-winged flies too fetid for anything's appetite. Dragon flies, beneficial by destroying gnats and mosquitoes, are also exceedingly swift in their movements, and not only that, but high in their flight. As they frequent pools and aquatic plants, not one poultry-yard in a dozen is so located as to give its inmates even an acquaintance with them. Prof. King unites with Prof. Trelease in a belief that chickens can, from the nature of the case, do no considerable damage to useful insects. The *Gardener's Chronicle* is not afraid to take the same stand.

Perhaps no one will object to such conclusions as have been reached. It is, however, for her supposed wanton and unnecessary destruction, her scratching up things, instead of cultivating around them, that biddy is chiefly hated. Is not her aim, extermination of bugs, and her injury to plants, incidental or accidental? Her purpose accomplished, does she ever again disturb the spot? The peas, before mentioned as attacked by weevils, we thought ruined by those hens which overhauled them. They were twisted every way, some plants nearly uprooted. In a few days, though, they straightened up, took new hold, and yielded excellently. Now, their work done, did our feathered gardeners ever return to them. A fence a yard high, knit of course carpet twine, in meshes an inch square, and, at intervals, fastened top and bottom to slender poles driven fast in the ground, is said to make a complete barricade against poultry of any kind. It is graceful, nearly invisible, and suitable for hedging in flour beds. Mosquito-bar, though less durable, answers very well, so reports a *Western Rural* correspondent. Mr. Hildreth of Massachusetts, owner of a large establishment, a farm, six hen-houses, eight hundred hens, etc., finds a movable fence, one lath high, made in sections, keeps them in bounds. Nor when brought up in a garden from the first, are they so likely to do damage as when they are only allowed in now and then, or get in by chance, reminding us of the hungry boy at a picnic. Our hens have access to all the premises, and we have an abundance of garden stuff to bestow on our neighbors, as a consequence, we believe. Undoubtedly, too, there are seasons and occasions when fowls will have to be confined in their yards.

The relation of poultry to horticulture is a worthy study, yet

in no sense is this paper expected to be decisive. Its aim is suggestiveness. How much loss and disappointment jumping to conclusions has occasioned in every industry, cannot be conjectured. Hens have been referred to most often because I am best acquainted with them. Ducks and geese are not practicable in every situation.

Turkeys are more voracious, but their crops are fatally tender when young. A clipping from a California paper says: "The wine-growers whose vines are suffering from the ravages of slugs, are employing turkeys to devour these pests. The thing works well. The turkeys like the slugs, the slugs cannot get away, the vines are saved from destruction. The owners of slugs, vines and turkeys are contented. Turkeys grow fat while thus earning their own living, for one of them is said to destroy more slugs than two men can." A New York paper tells of a farmer who keeps a drove of turkeys, and rents them out to other farmers whose crops are troubled by grasshoppers. They were found, in that section, good to destroy potato bugs also.

Some aesthetic and ethic considerations deserve a passing notice in conclusion. Mrs. R. B. Hayes, wife of Ex-President Hayes, is noted for her exquisite taste. A late visitor to their Ohio home enthusiastically declares she owns some of the finest fowls west of the Alleghanies. Stone deer, favorite ornaments on lawns, seem incongruous unless grounds are large and romantic. A live deer would certainly be out of place in confined areas, and among choice evergreens. A flock of hens in which there is choice of color from black, white, red, yellow, to ringed, streaked and speckled, can be made as effective as a flower bed, and far more kaleidoscopic. Like man, biddy does not wish to live and die "unwept, unhonored and unsung." No animal responds quicker to application. Let her see she is liked and valued and she rises constantly in the scale of intelligence, is obedient through life, and, after death, lives in the memory of those who eat her.

Mr. Gideon moved the thanks of the society to Mrs. Tilson, for her interesting paper and that she be requested to furnish a copy for publication. The motion was carried.

Mr. Harris. I have listened to the reading of the paper with a good deal of interest. I knew for some time that Mrs. Tilson had this paper in preparation, and I had promised to furnish some little items, but for some reason this past summer I did

not get around to do it. Poultry are very useful in a garden. But it is a fact that if you send down East and buy a package of seeds that are new and very choice, and if you dig up a nice place for them, you will find, if there is an old hen and her chickens running loose, that she is bound to find that particular place, and she will dig them out in a hurry. But if you will let the chickens run and tie up the old hen, you will not find that trouble with those choice seeds. Usually the hens do more good than harm. The natural food of the hens are the very insects which are most troublesome to us in the garden. One year I had a fine lettuce bed that was badly infested with cut-worms; but the hens soon found it out, for I let them run the most of the time. They went to work, and from appearances had soon destroyed it, and you wouldn't have given ten cents for an acre of it, after they had been on it for a little while. The cut-worms would come in the night and cut off the tops, then they would go under the surface of the soil; but the hens did not have to go very deep to get the worms. The lettuce came out all right, and I made some money out of it, whereas but for the hens I would have had no lettuce. There are some kinds of hens that I like better than others. Take the Leghorns and they will wander a good ways from the barn for their food. I don't think the Brahmas are quite as bad to scratch as some, but if they do get at it they are apt to break down the plants a good deal worse than others.

ENTOMOLOGIST.

Mr. Harris. I would like to speak of a matter of interest to the society. Last night we accepted the resignation of R. J. Mendenhall, as entomologist of this society. We have no provision in this State for the appointment of a State entomologist. Insects are doing an immense amount of damage, a little here and a little there, and their numbers are rapidly increasing. It strikes me that it is high time that we should petition, and, if we cannot do that, we should get on our knees to these solons and beg of them to secure the services of an entomologist who shall divide his time in the study of the habits of insects, and in experiments for their extermination. He should impart information for the benefit of every farmer, and there should be provision for annual and semi-annual reports, and they should be sent broadcast, as well as to have this information published in the newspapers. I want something more done than to publish such

information in the newspapers; I don't believe that more than one out of four of our farmers take an agricultural newspaper, and many of those who do read them, do not stop to consider what they read, marking the particular points and filing the paper away for future reference.

At the meeting of the Hennepin County Horticultural Society last Saturday, a committee was appointed to confer with a like committee of the State Horticultural Society, to ask the legislature to provide for an entomologist and mycoscopist. We need a man to examine these fungus growths and one who can tell us whether it was a bug that hurt those grapes. I don't suppose what information he would obtain in his researches would cost to exceed \$5,000. I presume the State can make the necessary provisions for obtaining the desired information at a cost not exceeding \$1,000. We have a State university and we have a Geologist. It seems to me the State might provide that in making the surveys throughout the State, there should be something done to get a practical entomologist. I hope that some steps may be taken to secure some action at the hands of the present legislature. I leave the subject with you.

President Smith then called upon Mr. J. E. Northrup, of Minneapolis, to read a paper which he had prepared upon the subject of "Seeds."

The following is the paper of Mr. Northrup.

SEEDS.

Mr. President and Gentlemen of the Society:

The subject of seeds is an all important one, and of more than passing interest to us all. The whole human family enjoys the benefits arising in varied forms from the seed, which sown to-day to-morrow affords us food, supplies us with clothing, and delights our senses.

The subject, then, if of interest to us, is especially important when considered in the presence of an assemblage which has for its object the gathering and disseminating of knowledge concerning the vegetable kingdom.

Were I to approach the subject from your grounds, I should feel extreme diffidence in giving expression to any ideas I might entertain to men whose lives have been passed in the study of the growth and habits of plant life, and from the anxious planting of the seed to its full fruition.

But every man to his trade and the few thoughts I shall present shall be from the standpoint of a seedsman.

We all concede the great importance of good seeds, and we all appreciate the disappointment which often results in not getting them.

In purchasing an article of clothing we can examine its texture and satisfy ourselves as to its quality, and there are tests, which will determine the value of any article of merchandise except seeds for which the only test is that of time.

This very fact has attracted to the seed trade many unworthy men who take advantage, not only of the facilities which are thus offered for deception, but find ready excuses for the failure of their seeds, in the circumstances of "injudicious planting and cultivation, unfavorable weather attending their growth," etc.

You have all, no doubt, experienced the sensation which attends the loss of a crop, after a season of labor and anxiety, and the seedsman from whom you procured the seed comes in for his full share of your maledictions.

If, however, there are "pirates" in the seed trade, there are also many conscientious, painstaking men to whom you are indebted for new and improved varieties, and who pursue their calling, fully realizing the responsibilities which rest upon them, and faithfully striving to meet them. And when your seed proves good and true, and turns you an abundant crop, should it not be as pleasant a duty to make known to him that fact as it is to inform him when the contrary is the case.

But a small portion of the seed-purchasing public realize the labor, care and expense involved in the production of a new variety of vegetable seed and the fixing of its habits.

As new varieties are the result of selection or hybridization, the tendency is to run back to the original stock—to retrograde instead of advance.

This requires constant watchfulness on the part of the grower. Discretion must be used as to the ground on which the seed is sown, care being taken not to put it in soil that will force too rank a growth. All noxious growths must be eradicated at the proper time in order to preserve the standard of purity.

Take, for example, an extra early pea. It must be early so that the gardener can market his crop while prices rule high. It must be even in growth and maturity, so that he may strip the vines at from one to two pickings, thereby saving expense and enabling him to use the land for other purposes.

In order to produce these results the grower must first choose good seed and put it on land that is strong, early and level. Level so that the crop will ripen off evenly, for if sown on uneven land the seed on the ridges will be early while that in the hollows will be later, and the vines forced to uneven and impure growths. Soon runners or rogues will appear and these must be carefully removed. The crop must be harvested at the proper time to secure the juices in the seed and a desirable sample.

As in peas, so in every variety of seeds. Each is made the study of some specialist who aims to produce it in its highest perfection. In fact, the conscientious seed-grower, to achieve the best results, must exercise over his stocks the same watchful care that a mother gives her child.

The seed-producing interests of the country have attained enormous proportions, and with its growth in bulk have increased the number of varieties, so that now we have thousands of so called varieties of vegetable seed.

Wonderful improvements have also taken place during the past few years in the quality of vegetables now grown. Many here doubtless remember well when the Marrowfat pea, now thrown aside as comparatively useless for the table, was the best pea known. What a revelation in this important vegetable was brought about by Dr. Fairbeard's accidental finding of a Champion of England in a pod of Marrowfat some thirty-five years ago.

Now we have at least two hundred so-called varieties of peas, some of them of distinctive character and merit, while others are comparatively worthless, or an old type put upon the market under a new name.

It would seem that amongst the number of varieties of real merit that the public appetite for novelties would be appeased. But so strong is the cry for something new and something better, something earlier or something later, that there are parties who make their sole business that of propagating new varieties of peas and disposing of the stock to seedsmen at figures that, to an outsider, would seem incredible. Fifteen hundred dollars per bushel would seem a pretty good price for peas; and yet I once offered Mr. Thomas Saxton, of Bedford, England, at that rate per bushel for his stock of a certain new pea, and did not get them at that!

This appetite for new and better varieties has had two diverse results. It has served to awaken the grower to the passing de-

mands of the hour, and has caused him to strain every nerve to meet them. The result—many new and valuable acquisitions.

It has also proven a strong incentive to unprincipled seedsmen to take some old and half forgotten variety, re-christen it, invest it with the combined virtues of all vegetables, and by the liberal use of printers' ink, spread it broadcast over the land at a fancy price. I think, I may say that fully two-thirds of the novelties to-day listed in the catalogues of *leading* seedsmen are standard varieties slightly improved upon, perhaps, or old and worn out sorts *renamed*.

It seems also to be the aim of seedsmen (speaking as a class) whenever they get hold of a good thing to give it another name, so that their competitors will not know what it is, or for some other wily purpose.

Old varieties, too, which were yesterday considered good, are to-day thrown aside for something else. Still the seedsman receives calls for them and is obliged to keep them on his list. Thus we find Carter's First Crop, Daniel O'Rourke, Philadelphia Extra Early, Caractacus Early Frame, Early May, and Early Kent Peas, listed in the catalogue under different names and at different prices, and the chances are they came out of one bin, and while once good and valuable varieties, have lost their distinguishing characteristics through this process.

Peas have been taken throughout to illustrate the points touched upon, and the same facts apply to almost every specie of vegetable seeds, though, perhaps, not to so great an extent.

The evils resulting are apparent. Much confusion arises in regard to varieties. The purchaser sends his half-dollar for some novelty selected from the catalogue and finds that he has some old kind that takes him back in memory to his boyhood days.

The seedsman, in order to have a full list, issues a catalogue at an expense of thousands of dollars, which must in some way be paid for from the pocket of the purchaser.

What can be done to avoid these manifest and growing evils? Hon. Marshall P. Wilder and Dr. Sturtevant, of the New York Experimental Station are doing good work in this direction, but the real and only remedy lies in the hands of the purchaser and the seedsman.

Many seedsmen are driven to the resort from the fact that strong competition, the fight for business, and the public demand have reduced the prices on standard varieties to so low a point that they cannot make their expenses, and are obliged to depend largely upon the novelties they offer.

The cry of "cheap seeds," too, has driven a number of reputable seed houses into the same channel.

The man who buys seeds because they are cheap, gets what he buys almost invariably. A few years ago a large seed house was retailing turnip seed at a lower price than it could be purchased for on the market. Accident disclosed the fact that they were baking rape seed so that the grain would be destroyed, and mixing with it a homeopathic dose of turnip seed; and as the two looked exactly alike, and what came up proved turnip, the purchasers probably ascribed the failure of the balance to the unfavorable season, and kept right on buying his seed of the same house because he could get it cheap.

In walking through a large seed warehouse sometime since, I detected the odor of burning brimstone, and my curiosity was aroused as to what part brimstone could play in the fitting of seed for market. Making some pretext for visiting that portion of the building from whence the fumes proceeded, I came to some cucumber seed, which was being bleached to remove the yellow tint with which age had mellowed it. The tags on the bags indicated that it had been in that building over twenty years, and how much longer no one knows.

The moral is this : Encourage your seedsmen to make *quality* the first consideration by making it yours. Pay willingly a good price for your seed and thereby fix the responsibility upon the seedsman.

If you do otherwise the irresponsibility and blame are your own, and you help demoralize a trade of which the true basis should be *confidence* and *trust*, and which all should endeavor to sustain in its purity.

Mr. Underwood moved that a committee be appointed on legislation regarding the appointment of an entomologist, consisting of Messrs. Wyman Elliot, J. S. Harris, and J. T. Grimes.

Mr. Grimes asked to be excused from serving on the committee. He said that Mr. Elliot was acquainted with the members of the legislature and would look after the interests of Hennepin county, while Mr. Harris was acquainted in the southern part of the State. Ramsey County is the second county in representation and he would suggest President Smith as a proper man to be a member of that committee.

Mr. Underwood accepted the proposed amendment to his motion.

President Smith said he had not shunned any duty imposed upon him for the past sixteen years or more, and there was no member of the society who considered it more important than he to have an entomologist; but perhaps there were others who might have more influence with members of the legislature, as he was not a politician and not a good hand at log rolling.

The motion was put by Vice President Sias and carried.

The following communications were read:

MINNEAPOLIS, Minn., Jan: 19, 1885.

DEAR SIR: I regret that your card requesting me to furnish an article for the society was received so late that I am unable to accede to it. I am much interested in the work, and only lack of time deters me from sending something for the meeting. At the next meeting, if desired, I will do what I can.

Respectfully,

MRS. C. O. VAN CLEVE.

ROCHESTER, Minn., Jan. 19, 1885.

T. M. Smith:

DEAR SIR: Thanks for invitation to attend Horticultural Society. Should be glad to do so, but not having received notice before of its session and no program, have made other arrangements, so that time will be wholly occupied for the coming week. Hoping you will have a pleasant and profitable time,

I am yours with best wishes,

M. W. COOK.

REPORT OF GENERAL FRUIT COMMITTEE, ROCHESTER DISTRICT.

The apple crop for 1884 was reasonably good.

The fruit display at the Southern Minnesota fair of this city in September last surpassed all former exhibits. The many new seedlings brought out on that occasion are worthy of special mention, particularly those by J. W. Hart, known as the "Brett Seedlings." Wood of the latter seedlings on exhibition showed perfect hardiness. Also the Waldron seedlings were much admired. The following six varieties of apples, in the order named, are deemed worthy of cultivation for this locality: Wealthy, Duchess, Elgin Beauty, Tetofsky, Juicy Streaked, Red Anis. Hybrids—Whitney No. 20, Early Strawberry, Beach's Sweet.

The strawberry crop for 1884 was all that could be asked for. It is estimated that the crop marketed by growers in the vicinity of Rochester alone would not fall short of 3,000 bushels.

The varieties best adapted to this locality, so far as tested, are Crescent Seedling, Downer's Prolific, Boyden, Green Prolific, Old Iron Clad, and Piper's Seedling.

Raspberries. — A magnificent crop. From 2,500 to 3,000 quarts of this fruit were the daily shipments from this market during the best part of the season, principally of the Blackcap variety. Best varieties, so far as tested: Blackcaps: Ohio, Doolittle and Tyler. Reds: Turner, Cuthbert, and Brandywine.

Grapes. — Crop good. Our choice for this locality: Worden, Concord, Janesville, Moore's Early and Champion.

M. J. HOAG.

FRUIT REPORT FOR McLEOD COUNTY.

The culture of small fruits in this county has received considerable attention the past two years, and those giving them the necessary care have received their reward.

Our markets were pretty well supplied with strawberries the past season, and some currants and wild raspberries were in the markets. Wild plums were plenty.

Plenty of crab apples were in market. Perhaps half a crop was produced. There is generally a surplus of crab apples here which find a ready market in Dakota.

But few standard apples are grown here. What few find their way to market are mostly Wealthy and Duchess.

Most of the farmers have been swindled so many times that they will buy but few apple trees at present. They want something that is almost literally iron clad, trees that will stand the coldest of winters, the hottest and longest of droughts, browsing of cattle and rabbits at the top and gnawing of gophers at the bottom.

I think it a waste of time and money for the majority of our farmers to buy standard fruit trees.

If our farmers wish to have plenty of nice fruit they should invest a few dollars in the hardiest kinds of small fruit plants. Currants, gooseberries, grapes and strawberries hardly ever fail to produce a good crop if given proper care. The market demand for fruit seems to increase as fast as the supply, and I think the future will show a rapidly increasing interest in horticulture in this county.

M. CUTLER.

REPORT OF G. W. FULLER.

LITCHFIELD, MINN., JAN. 22, 1885.

T. M. Smith, Esq.:

DEAR SIR: Your card received, and would have been answered before but I have been away from home. I am sorry to say I can not give you very definite figures about our fruit and so will not give many.

Our Wealthys bore very full, so that we had to pick a good many when not half grown.

The crabs bore nearly as well; our Whitney No. 20 have not yet began to bear well. But the Tetofsky and Duchess only gave a fair crop.

Strawberries bore finely but as we dig plants from most of our beds, can not give figures.

The dry weather hurt our raspberries and currants so we only got a two-thirds crop.

The Cuthbert seemed to stand the dry weather better than others.

The long fall gave grapes a chance to ripen up well, and we gathered some fine ones, though we are not well situated for raising them. Yours truly.

GEO. G. FULLER.

REPORT FROM J. C. KRAMER.

LA CRESCENT, MINN., Jan. 19, 1885.

T. M. Smith, St. Paul, Minn.:

SIR:—Your card received. I would say in regard to your wishes, that I am not able to send a full report upon fruits of this vicinity, but will try to do so to the best of my knowledge.

First, the apple crop has been a fair one but the fruit rather poor and wormy. The trees are dying out badly. I have lost almost all my apple trees; two Talman Sweet, two Russet, one Snow Apple. Duchess is sound; also the Tetofsky. I think we shall have to commence raising seedlings altogether. I have so far had good success with seedlings; have now ten trees in bearing. Some of them are very good. Have had more benefit from my seedlings than from all the trees I have ever bought. Have some nice samples on hand which I had intended to exhibit at the annual meeting, but the weather is such that I cannot come up. As soon as the weather will permit will send them to you

for examination, and trust you to give a report of them if you desire. Hope I will have some fruit from trees raised by my new method. As soon as they show their fruit I am ready to give a full report and a history of them. Think I shall have good success and that they will prove to be hardy trees.

Grapes are healthy at present, the wood being sound and ripe. The crop was small. Concord is so far the grape that seems to be best adapted to the climate of the Northwest. Have some new seedlings that have not been fairly tested. Have two new grapes of value, and will send a specimen of one kind. Am on track of some good seedling apples and will get hold of them if possible.

Strawberries.—The crop was light. My best so far is my seedling No. 2. It is late, good bearer, healthy, dark leaf, fruit dark; have counted twenty-seven berries on one stem. It is a pistillate berry. Have one newer variety, which I think will bear next season.

Raspberries.—Have three new red seedling raspberries, all distinct, or different from each other. One of them is a full type, that is, renews from the top; another is hard to produce plants from; both splendid bearers, rank growers, hardy enough for Siberia; the third is a sucker from the roots. I discovered it in 1883; last spring the ground was broken and I noticed about a dozen canes that came up, but I paid no attention to it until late in the fall, when we had some visitors. We were passing around showing the remarkable vines and leaves, which were three times as large as usual, and they were astonished to find fifty-three berries on one cane. The largest one measured one and one-eighth inches in diameter, or three and three-eighths inches in circumference, and I kept that berry for nine days in good condition. What the result will be with this kind I do not know; another season will tell.

Yours respectfully,

JOHN C. KRAMER.

DISCUSSION.

Mr. Harris. Mr. Kramer is always making experiments. He has been experimenting for years with raspberries and strawberries, and he is a wideawake man. He had a very fine raspberry on which he was experimenting but he would not give me any of the plants, and he used to watch me pretty close, afraid I would take the plants, I suppose. He has originated hundreds

of varieties of strawberries, but has only one variety that he says he has any hopes of, and I have no idea that that is any better than some other varieties that we have. I believe that he is entirely honest.

Mr. Smith. Would it not be pretty hard to beat that raspberry?

Mr. Harris. We found one variety in his grounds that would beat it; it was a rather remarkable variety, and we found one berry that measured over six inches.

Mr. Whipple. Do you mean in diameter? (Laughter.)

Mr. Harris. I mean in circumference. I tried to get some of that variety of plants; I offered him a dollar a plant in order to get started with it. But he declined to let me have them. The next year his sheep ran in there for a pasture and the plants were destroyed. He is that kind of a man, all the time planting and experimenting.

On motion of Mr. Underwood the report was ordered published.

Gen. Le Duc related an amusing anecdote of a colored preacher who, after being poorly supported by his congregation for a number of years, told them he would take his text where he would find them: "Where the hen scratches, there she expects to find the bug." (Laughter.) He said he would like to find out from the lady who had read the interesting paper about the fowls, how she proposed to make any money out of them? He wanted to ask some questions and have a little discussion before adjournment.

On motion of Mr. Smith the rest of the evening was devoted to discussion.

DISCUSSION ON INSECTS.

Mr. Underwood. I would like to inquire as to the best methods of killing the codling moth and curculio, which infest the orchards, and which produce the little worms that are doing so much mischief. I have seen numerous articles in different horticultural works as to the best methods, and think the one that seems to have preference at present is that of spraying the trees.

Gen. Le Duc. I have seen that done. They make an emulsion of kerosene and some other article which they use, known as London purple, but I think they have abandoned the use of the London purple, and use a preparation of arsenic. The trees that are expected to bear fruit are sprayed regularly. It is done

in a very short time and at little expense. A man takes a barrel filled with the composition, and has a pumping apparatus, and drives through the orchard with a stone boat, driving between the rows and stops by the trees, and the spraying is done by means of a hose. The man who drives the team works the pump, and the trees are sprayed very rapidly. It is cheap and effectual. There is no trouble with the insects. In the South, where I have seen this done they treat other fruit in this way, their orange trees, lemons, apricots, and peaches, and I have also seen it applied to olive trees and English walnuts. Generally the walnut takes care of itself. I think the cheapest thing for an emulsion is kerosene oil. You will find a description of the process in the report of the Department of Agriculture for the years 1880 and 1881, and you can find it also in the *Rural New Yorker*.

Mr. Gideon. Do they put anything in with the kerosene?

Gen. Le Duc. They put in milk.

President Smith. They also put in soapsuds.

Mr. Whipple. I have tried an experiment. I saw a plan recommended in a leading agricultural paper for killing the curculio; I told my wife I would test that. It was to take a white sheet and spread under your plum trees and go along at the proper time and jar the trees and the curculio will fall and lie dormant until you could take them off and burn them. So I went out with a sheet and labored faithfully for an hour or until I got hungry; it worked well. I succeeded in capturing one of the bugs, and I came in and told my wife that I was satisfied that would work. (Laughter.)

Gen. Le Duc. I have captured hundreds of them in that way.

Mr. Smith. I would inquire if the larvæ does not have to go into the ground before it changes?

Mr. Harris. Not necessarily. The codling moth don't go into the ground. They will change their form under the hoops of an apple barrel, or you will find them in your pantry if you have apples there.

Mr. Underwood. I would like to ask Mr. Harris if these screens which he recommends for the protection of trees ought not to be taken off in the spring of the year, for fear they might furnish a hiding place for the codling moth, or other insects?

Mr. Harris. My impression is they ought to be taken off. They will hide there. The codling moth won't get under, but

after the first crop of apples drops that have been stung, the worm will crawl up and where they touch the tree they find a harbor and the insect is protected and the birds cannot get at them. It would be well to examine them and to kill all the worms you may find.

Mr. Smith. Is not a band of hay a good protector?

Mr. Harris. If you will destroy it.

Mr. Smith. And again, wouldn't it work well to have the chickens run through the orchard and especially about the time the first crop is harvested?

Gen. Le Duc. I have relied upon chickens to defend my plums and they did it thoroughly this year. I put a brood of chickens under the tree and I had a fine crop of plums. I would like to inquire of Mrs. Underwood as to her theory about the shading of trees; when do you put around your screen and how long do you keep it there? Do you think the sun injures the tree in mid-winter, or when the sap starts in the spring?

Mrs. Underwood. I cannot tell much as to the results as I only put the shield on this winter. My theory is that the sun scalds the bark of the tree during the winter. I think it is mainly when we have these sudden changes during the warm, thawing spells.

Mr. Underwood. I think that has been canvassed in our society almost every winter. We have illustrations of it in the forests. You have noticed, perhaps, that when you go outside the house, right under the porch, where the wind could not get to it and the sun was shining, the snow was melting. I have seen it but I could not say positively how cold it was but I know it was very cold, and I think the uneven temperature, caused by the direct rays of the sun, just at the warmest time of the day, is undoubtedly the cause of this injury which is done on that side of the tree.

Gen. Le Duc. I could understand how that could be the case if there was any sap in circulation.

Mr. Underwood. I built a fire one time in the spring of the year near to an oak tree. I was not thinking of injuring the body of the tree, but thought I would try and not injure the top of the tree. It was a thrifty, live young oak, as thrifty as I have ever seen, and you will imagine my surprise when in ten or fifteen minutes the bark cracked from the root up as much as six feet. I am not much on theory but I can tell what the result is. So with our apple trees, we find on the south side where the rays

of the sun are directed from 12 to 2 o'clock in the afternoon the injury is done, and there is everything to indicate that it is done by the rays of the sun. It is not done in the summer time, that is sure; I think it is done in the severe cold weather. Most likely in February and March. It is possible this matter of protecting our trees has not engrossed our attention as it should have done. It is one thing that we shall attend to more closely from this time forward. I hope I will have sense enough to protect the outside of the tree. The chicken plan is all right where it can be carried out, but of course with some 30 acres of orchard to protect from the codling moth and curculio it would take a good many chickens.

Mr. Gideon. I have had some experience and examined into this sunscald to quite an extent. I have not yet seen a sunscald on any portion of a tree where it was shaded during the heat of summer. My theory is that it is done by the hottest weather in the summer. It seems to me if done in the winter various portions of the tree would be sunscalded. An open top tree it never shows, except on that side of the tree where the sun can not strike it when the leaves are on. If it was done after the leaves were off we would see where it would strike through and attack large branches on the opposite side; when the leaves were off the sun could shine through. I don't think the sun ever effects a tree after the leaves are off from that time until the hot weather comes again.

Mr. Tuttle. I can indorse what Mr. Gideon says in regard to that injury to the tree. I have watched that thing a great deal, and if I were going to protect the tree at all (and it is very desirable that a tree should be protected while the buds are drawn up as they should be) I should protect them in the summer. It is the strong heat of the summer in the warmest part of the day which strikes the body of the tree. This work is not all done in one season, but it is work that is going on for years. You will find where the foliage of the tree does not shade the body, the tree flattens, the growth is obstructed, and gradually the bark becomes hardened and injured. Then we will have a severe, cold winter, in which the injury will show itself by the rupture of the bark. The cold acts exactly in the same way as the heat, to drive out every particle of moisture from the tree upon that side where the injury has been done in the summer. The difficulty is frequently finished up in the winter. I know in the Southern states—in Georgia and Alabama—they have to put boards up on

the south side to protect the trees in the summer. I believe if our trees were protected in the summer there would be no danger from bark bursting. I had trees called the Summer Golden Sweet. The body of the tree stood so that in the hottest part of the day the rays of the sun were direct upon it. I noticed this hardening process going on for a year or two, and in the fore part of the summer I saw the leaves were turning yellow. I went and put up some siding to protect the body of the tree, and it lived for twenty years after that. I left it there summer and winter. The bark became loosened, and it grew over. The tree finally got healthy on that side; and I have no question in my own mind that the cause of the injury in the first instance was in consequence of the extreme heat of the sun in the summer. I have trees nearly a foot in diameter, with large limbs, which lay under the direct rays of the sun; and I think they would be injured if that was the cause of the trouble, for the bark is more tender than on the body of the tree. Again, it is seen that in the summer that portion of the tree that is not shaded by the foliage will be injured, and those portions that are shaded always escape.

In regard to this use of the London purple for the codling moth, or the use of arsenic, I don't see how you can reach them. This moth works in the night, and stings the apple during its early formation; and how are you to reach the codling moth with poison when it merely stings the apple? We don't know that the moth eats anything. Anything that eats the arsenic or London purple, it will destroy it.

Gen. Le Duc. Or anything that hides in the bark.

Mr. Tuttle. The moth operates in the night. It is a sure and certain remedy for anything that feeds upon the leaf.

Mr. Underwood. I would ask Gen. Le Duc how the kerosene works?

Gen. Le Duc. It affects those insects that destroy the tree. My earliest experience with it was in 1856. I bought the first barrel of kerosene that came here for lighting and for oiling purposes. I took it to Hastings to use in a mill for oiling purposes. I had some plum trees. I requested one of the men to bring over some turpentine, and instead of that he brought a can of kerosene. I tried some of the kerosene, and found that wherever it touched one of those insects it doubled up and was dead in a moment. So, instead of sending it back I used the kerosene and destroyed all the insects there were there. I experimented with other insects. This was distilled kerosene, of the cannel-coal, or

from some of the shades, but was, in constitution, about the same as it is now. I wrote an article to the New York *Tribune*, explaining the destruction which it was to insects in this use of kerosene. About two or three weeks afterwards I noticed some of the limbs where I had applied the kerosene oil, and found it had killed them and destroyed that part of the tree where I had used the kerosene. I didn't like that part, but I thought those who tried it would find it out for themselves. Kerosene oil is as destructive as anything I know of for all insect life, as much so as anything except the London purple. This dust is sold very cheaply, and is prepared by the druggists, and is worth perhaps 75 cents an ounce. You can reach with it millions of insects that fly, that you cannot reach in any other way. I have destroyed the troublesome millers with it that are so fond of cabbage.

Mr. Gideon. Is it a poison?

Gen. Le Duc. Not to animals. It is to insects. It brings on convulsions. It is not poisonous to human beings. I use it in my stable frequently where it proves very effectual.

Mr. Gideon. In using kerosene, what proportion of water would you use?

Gen. Le Duc. You want to use kerosene with milk and mix with water. You want to make an emulsion and apply with a syringe. We used it altogether in protecting the greenhouses in Washington and were very successful. That was done with water, but it led to experiments which resulted in the emulsion.

Mr. Tuttle. I would say that that same remedy had been used on the cranberry marshes for the worm. They used I think some seventy-five barrels of kerosene on our marsh for the vine worm this last season. I am satisfied that for anything that eats the leaves as the vine worm does, I can destroy with ten cents worth of arsenic as many insects as you can with a barrel of kerosene. That amount of arsenic is enough for three barrels of kerosene, and sufficient in strength to do thorough work.

Mr. Whipple. Would you recommend the use of that on cabbage?

Mr. Tuttle. Well, no; I don't know as I would. In regard to the codling moth I would say, that I have tried a great many remedies, and I have destroyed more codling moths in a single evening with a pan of vinegar than with any other trap I have used. I have set out a six quart pan filled with vinegar and the next morning have found it covered.

Gen. Le Duc. Is it possible?

Mr. Tuttle. They will be attracted by the vinegar. They will collect where there are sour apples. The first I noticed it was by their getting into a large cask of vinegar holding some eight or ten barrels which I had standing out of doors. I thought it very good use to make of it as it was the best trap I could get for the codling moth.

Mr. Dartt. Mr. President, I wish to say that I have good reason to believe that this injury to the trees that has been spoken of is done during the latter part of the winter by the effects of the sun. I will not take time to give you my reasons. I have had experience with the plum trees in the hen yard. There may be hens that have kept everything from growing under the trees, while nearly every plum was stung so that it was good for nothing; but I am inclined to think that theory is a humbug. It has proved so with me and I think that this new branch of horticulture that has been brought out to-night is the most profitable branch; and all will admit that it is the most profitable of any that we have had in our society and that there is more money in raising "hen" fruit than any other kind of fruit that we can raise. (Laughter.)

Prof. Henry. Mr. President, I do not want to see members leave until the fog is cleared up on one point. In regard to the codling moth, I want to say this: You can carry your mind back to the time when the tree is in blossom and at the time when the blossoms fall from the petals; at that time, during a couple of days the codling moth is around depositing her eggs. She deposits her egg near the calix end of the blow, and if left there twenty-four hours, it hatches into a worm. Now, having them located in that place, the question is, how can we manage to kill that little fellow? The best thing to do it is to use some of the arsenical preparations. If you have insects destroying the leaves, you want to get the arsenic upon the leaves where it will be eaten. You will not kill the vermin until the arsenic is eaten, and if the rain washes it off, then you must apply it again. And so with the destruction of the young larvæ upon the apple buds; you can apply the arsenical preparation by means of a force pump, and leave it on the bud of the apple until the worm has eaten some of it. You do not hurt the female. I don't know that she eats anything. But if you will follow out this idea you cannot help making your work effectual. But you must remember that the rain will wash off the arsenic and then it needs to be re-applied.

One other point. In regard to the splitting of the oak tree,

referred to by Mr. Underwood. It struck me at once as illustrating an interesting fact in regard to the sap. In the winter the sap does not travel up and down the tree like it would in a stream, for it cannot come from the roots in cold weather. There is in a maple tree a large amount of sap and a considerable quantity of air. During a cold night the air passes in and out of the tree, for you know that air will pass right through a tree, but of course it is very slowly. There is a certain quantity of sap there and air within the cells. When the bright sun comes out, the heat striking the tree expands the air, that squeezes the sap in all directions. If you tap the tree the sap flows out; that is the theory of the flow of sap in the spring. Had the fire been built up very slowly, the tree would have been heated slowly and the air would have gradually passed out and that phenomenon would not have been noticed.

Mr. Underwood. I don't see how that would affect the tree in that way in the winter.

Mr. Pearce. I would like to say one word on that subject. I am glad the professor is here, so if I am wrong he can correct me. I take a different view of this injury to the tree from all others pretty much, but science has to bring out these points; theory is not going to do it. It is a well known fact that during the winter time the roots are inactive, but there is life in the tree. In the spring of the year the buds begin to start, through the aid of the carbon in the air, and that produces sugar and glucose and other substances necessary to produce the bud. Under the bark of the tree the sap cells are supplied with food, which during the coldest days of winter, is passing off through the pores of the tree to the outside. There is food in the tree passing off all the time. If the winter is very long and the supply is very scant this food become entirely exhausted. I have investigated this with a microscope that magnified two or three hundred diameters. When the food in the tree becomes exhausted, I find the bark dies and becomes dried up. As long as there was this nourishment it kept the bark alive and kept it healthy; but just the moment all the food in the bark passed out, there was nothing to keep up the freshness and vigor of that bark. We see this illustrated with the southern trees, where they have shorter winters, and of course there it requires less food to carry them through. There is food enough to last two or three months. But here we find sometimes that there is not enough food in the trees to carry them through, and they become exhausted some-

time during the month of March and die. I will go farther and say that there is a great difference in the bark of trees; there is a great difference in the cell tissue; some trees throw off less moisture than others. Take the Russians for an example. As a general rule, the naturalist will distinguish the difference in trees that grow in one country and those that grow in a warmer country. The cell structure is different as well as the covering of the bark. Everything is made to close and keep this moisture in. But if this food becomes exhausted the tree dies. When we examine the Russian varieties, we find a different class of trees altogether. We find thicker bark, the cells are covered and calculated to go through a long winter. My remedy for this difficulty is to keep my trees growing and give them all the nourishment I can. After the terminal bud is formed then comes the process of filling up the sap cells; then evaporation commences and keeps on, and I doubt whether there is any sap in solution in the tree in the winter. It passes off and is all assimilated, and the tree goes into the winter in a condition so that it will not rupture. In my orchard I aim to have my trees in good condition in the fall. I want the buds all out full, and want the bark smooth, not all shrunken in.

Gen. Le Duc. How are you going to make it that way?

Mr. Pearce. I feed my trees.

Mr. Whipple. Have you accomplished the object?

Mr. Pearce. I have with some trees. Every tree that I have taken care of and mulched has done well; but I may be all wrong.

Mr. Gideon. I think you are getting off on to science.

Mr. Smith. I had some experience which I would like to relate. I had a few rows of grafts, Red Astrachan, Duchess, Perry Russet and Transcendents. On the west and south side were a lot of grapevines. The trees were all in a good healthy condition, to all appearances, on the first of December. The snow drifted over the grapevines until it was something like three feet deep and came to the tops of the trees. Toward the north end the snow was all blown off the ground. I noticed that along in February the ends of those trees looked dry and too dark-colored to be healthy; I cut some of them off and I noticed that they showed a dark color between the wood and the bark. In the spring when the snow was all off, those at the south end that had been buried in the snowdrift, started to grow as high up as the snow was on them; toward the north end of the rows

they were all more or less affected, and on the south side of the trees the bark cracked and peeled off. Some of the Transcendents blistered and cracked their bark, and yet, in that condition, formed a new bark over that and grew all right. The most of them I cut down to the ground the next spring. I believed at that time that all of the damage was done between the first of December and the first of April. When I examined them the first of December they appeared to be all right, and I noticed this trouble along about the first of February; but noticed it more particularly about the first of April. The Red Astrachan, which was buried in the snow, started out without any bark blistering at all.

Mr. Pearce. I would like to ask the opinion of the professor about this phenomena of the sap and the cells of the trees.

Prof. Henry. It would take too long to go into that at this time.

Gen. Le Duc. I would ask if, in using the arsenic to destroy the colding moth, the eggs are not deposited too deep to kill the insects in that way?

Prof. Henry. No, sir; it is on the surface. By spraying the tree it will catch them. The arsenic preparation is fatal when eaten. It kills the worm and in some instances will kill the eggs also. But, recollect that if you use the arsenic preparation you must use it before the little worm has got into the apple, for when he has gotten inside the little apple he is safe, and he laughs at you. You must catch him after the egg has been laid and about the time the petals fall from the blossoms.

Gen. Le Duc. The simplest thing is the vinegar.

Mr. Underwood. This has been to me the most interesting and profitable discussion of the session thus far. I hope we may get a paper from Prof. Henry elucidating these matters more fully than he has been able to do here to-night and trust we may not be disappointed. I want to say in regard to the injury to that oak tree from the bark bursting that I cannot get it out of my mind, that it is not the freezing but the sudden thawing that does the damage. As the Irishman said, "It didn't hurt him at all to fall off the house; it was the stopping." So I think that when the sun comes out and warms up the south side of the tree that that is the time when the injury is done. Of course I am dealing with these things in a practical way, not in a scientific way at least; and it is very pleasant to have someone who has given these things more thought and who is able to

help me out on the scientific part of it. I shall try and profit by all this discussion that we have had. It seems to me that the most profitable and the most to our interest is the protection of our trees from the ravages of the curculio and the codling moth, and information of this character is the most important and valuable we can obtain.

Mr. Dartt. Mr. Underwood is right.

Mr. Shannon. There seems to be a difference of opinion as to the proper time to protect the tree.

Mr. Underwood. It seems to me the protecting of the tree by means of a board is apt to make a harbor for the worms.

Mr. Harris stated that it was getting late and was past the usual hour of adjournment, but he hoped there would be a good attendance in the morning to listen to the discussion as to the location of State fair grounds. The meeting then adjourned till morning.

MORNING SESSION.

THIRD DAY—THURSDAY, JANUARY 22, 1885.

The meeting was called to order by President Smith at 9 o'clock.

FRUIT REPORT FROM J. W. POOL.

FARMINGTON, Minn., January 21, 1885.

T. M. Smith, President State Horticultural Society.

We have had one of the best years for all kinds of fruits I ever saw in the state; with me especially all kinds of small fruits. Strawberries we had in abundance for four weeks; grapes, also, were a good crop with me.

JAMES W. POOL.

LETTER FROM F. G. GOULD.

A letter was read from F. G. Gould, from New Orleans, stating that fifteen entries of grapes had been made at the exposition in the society's name, comprising eleven varieties displayed on sixty plates, and he thought they had won three medals and

seven prizes. Of the ten plates of the best, five of each were for the table and wine. The best plates contained the Concord, Delaware, Catawba, Ionia and Brighton, and best bunch. Ohio gave Minnesota the hardest pull on the Catawba of any state east of the Rocky Mountains. Rev. C. B. Sheldon, of Excelsior, was more than a match with his Catawbas for the Lake Erie district. A. Bonjour exhibited the best bunch of grapes; A. W. Latham the best Concords, and F. G. Gould the best Delawares.

Mr. Dartt was requested to present his report as delegate to the meeting of the Iowa State Horticultural Society.

REPORT OF E. H. S. DARTT, DELEGATE TO IOWA.

Mr. President and Members:

I have again been privileged to attend the annual meeting of the Iowa State Horticultural Society. The meeting was well attended by substantial, representative men of one of the best and most progressive states in the Union. Delegates were in attendance from Wisconsin, Illinois, and Kansas, to whom were extended the usual courtesies.

The last year has been a very disastrous one to the fruit interests of Iowa. The reports of directors from all sections except the southwestern portion show a light crop of fruit of nearly all kinds, varying usually from half a crop to a total failure. These valuable reports also show widespread destruction of trees in orchards, twenty-five to thirty per cent of all orchard trees being killed outright or virtually ruined. It may be regarded as a singular fact that this destruction was greatest in the southeast part of the State, where the mercury went down to about forty degrees below, and seventy-five per cent of orchard trees are reported ruined, some entire orchards being destroyed on low lands, while on high lands the injury was proportionally less according to altitude.

The greater destruction in this section is undoubtedly due to the fact that farther north more attention has been paid to the selection of hardy varieties. Nursery stock and young orchards have suffered but little, while orchards ten to fifteen years out are injured worse than older trees. The variety that has suffered worst of all is Ben Davis. Some will replant this variety on account of its good record in the past, while others will discard it entirely. In the southwestern portion of the State but little injury was done; a few trees were killed, the number increasing toward the north.

The fruit crop in this section was generally good.

There seems to be quite a difference of opinion as to the cause of this general destruction of trees. Some believe it is not the severe cold of winter that kills, but the sudden changes towards spring. Others think the condition of the soil as to moisture at the setting in of winter has an important bearing—abundance of moisture being a favorable condition. But all agree that hardier trees are a necessity, and that to obtain long keepers of the best quality extensive experiments must be carried on, and in view of this fact they voted to ask for an annual appropriation of \$2,500 in addition to the \$1,000 they now receive, believing that a state rich enough to build a \$2,000,000 capitol can well afford to devote this small sum to promote so important and reliable a branch of industry.

The president's address was brim full of good, practical suggestions, and the lectures and essays were admirable productions in the English language, affording scarcely a reminder that the authors knew a little Latin and desired to make the most of it.

It occurs to me that in sending delegates to adjoining states more favorably located than our own, our greatest benefits must accrue from adopting such of their methods as are superior to our own and avoiding such as retard.

In my last report I mentioned Iowa's plan of districting the state and electing a director from each district. My observations at this meeting confirm me in the opinion that with the combining of the reports of two or three of twelve districts in one to save repetition, as recommended by their president in his address, we may adopt this plan with great advantage to the whole State, and we might be relieved from the charge of being too local, and of being under the control of one of those little rings that frequently cluster around state capitols.

The program seemed remarkably full, requiring the constant effort of their able and energetic president to put things through on time. Fruit lists were revised by committees, and when reported it was announced that there was no time for discussion. If it is a fact that fruit-men, like others, have their whims, hobbies and errors, and that these are likely to crop out in their essays, it would seem that time should be secured to discuss all papers to the end that nothing shall go on record with the seeming approval of the society that is not in accordance with the views of the majority. On important questions where there is a radical difference of opinion, a recorded vote, showing the number on

each side is more reliable data for the guidance of the people than to leave them to judge by reading the remarks of individuals. For it is a melancholy fact that some men, the world over, have vastly more lip than sense. Their mouths are always open, and they talk so much that those more modest are ashamed to say anything. But if we take a vote we get the views of the wiser heads who think more and talk less; and besides we make a record that may save the necessity of fighting the same battle o'er and o'er year after year. If we can thus establish a few landmarks, even though we might have to right up the lines the next year, it will secure more substantial progress than to stick no stakes and attempt a new survey of the entire field each year.

Good generalship is, perhaps, as essential in running a horticultural meeting as in managing a farm; and a farmer who plans twice the amount of work he is able to perform is unwise, and if in addition to this he indulges in story-telling in the field, all the worse. With a program just broad enough to cover essential points thoroughly discussed under a five minute rule, to hold in check our nice talkers, who frequently edify more than they instruct, and a clear and succinct record of these discussions, we may reasonably hope to bestow upon the people of our state those benefits which they have a right to require at our hands.

On motion of Mr. Harris it was ordered that the report be embodied in the transactions.

Mr. Pearce called up the matter of the prize essays which had been offered at the meeting last year, and a discussion was had as to the manner in which the committee had made the award. The discussion was at some length and quite animated; but pending action the matter was laid upon the table.

ANNUAL REPORT OF THE SECRETARY OF THE STATE HORTICULTURAL SOCIETY.

NEW ORLEANS, La., Jan. 12, 1885.

Mr. President and Members of the Society:

My duties as commissioner to represent Minnesota at the World's Industrial and Cotton Centennial Exposition at New Orleans have prevented me from giving that constant personal attention to the horticultural interests of the State which heretofore, since I have acted as secretary of our society, it has been

my pleasure to bestow. Yet so far as the actual duties of the secretaryship are concerned in the usual routine work, nothing that I am aware of has been neglected. The annual report for 1884 was out of press and mailed to members on the tenth of April, an earlier publication than ever before secured; due partly to the prompt attention to the printing and binding by the State printers, Johnson, Smith & Harrison, of Minneapolis, and partly to the fact that from the day of adjournment of our last annual meeting, to the tenth of April, I was enabled to make daily visits to Minneapolis to read proof at the printing office, without the usual delay of sending and returning the proof by mail.

You will observe by my account, herewith appended, that some extra expense attended this attempt at an early publication, but having succeeded, for the first time in the history of the society, in placing the report in the hands of the members before the season of spring planting came upon them, it seems to me that the expense was well invested.

The reports have been distributed to all persons entitled to them by law. They have been sent to the members of the State Senate and I have requested the librarian to send to the capitol a sufficient number of copies to supply the members of the House of Representatives. Under the instructions of the society at the annual meeting two years ago, I have mailed our reports to all persons making application for them.

Our reports are in demand from citizens of all the Northwestern states and many others. Whether it is to the advantage of the State to continue this free distribution, it is not for me to say. The record shows that large numbers of the citizens of our own State are receiving copies of the report, upon application by mail and otherwise, who are not contributing as members of our society. While we continue to have enough copies to supply people who care enough to read our reports and ask for them, it seems to me better to send them out than to put away an unnecessary number of copies to remain unread in the library.

I have not been able during the year to look up, as formerly, the new varieties of apples reported from various parts of the State, but trust you will get some accounts of them through our committees and members to extend the record of this interesting class of our fruits at the present meeting.

The cions sent out for trial are all recorded in the last annual report and I hope the members who had them will furnish a statement as to the varieties living and how they are doing.

The year of 1884 has been in some parts of the State very favorable to the apple crop. We have had no difficulty in obtaining large quantities of excellent specimens of the "Wealthy" and enough of the sorts, in more general bearing, to be able to show at the World's Exposition nearly two hundred bushels in all. I have not found a larger quantity, nor finer specimens of apples in the exhibits here of any State, although some of them exceed us in number of varieties. At the present writing we are just laying out our fruit for exhibition and find most of the fruit, except the grapes, in excellent condition. The attempt to show our grapes has been an experiment and is not an entire success.

The proceedings of the summer meeting have been copied out in proper form for publication and are herewith submitted. These proceedings with this brief statement and the financial account appended, I must ask the society to accept as my report to the annual meeting.

I hope you may find in the horticultural results of my work as commissioner some compensation for my shortcomings as secretary.

If the society should think it best to get out an annual report for 1885, it is my duty to recommend that some other person be selected as secretary for the coming year, as my duties in maintaining the exhibits of the State at the World's Exposition and attending to their proper representation, and preparing the official report at the close of the Exposition will place it out of my power to edit and publish such an annual report for the current year as I would be glad to get out as one of the series with which I have been officially connected.

I trust that you may have a pleasant annual meeting, and enlist more of that appreciation and support from members of the legislature and the State officers which have been heretofore accorded us; and that although your secretary is away among the orange groves, you will believe that his interest in the problems of fruit growing in our State has not abated.

I will send a check for the balance due the society, to my successor, as soon as I hear of his election.

Offering the members and their friends a cordial welcome to the Minnesota Department of the Exposition, should they find themselves in New Orleans this winter or the coming spring, I am,

Yours respectfully,

OLIVER GIBBS, Jr., Secretary.

P. S.—*I will hold the proceedings of the summer meeting and send to the new secretary.

*Proceedings not received.—Sec'y.

UNION FAIR GROUNDS.

President Smith here called attention to the fact that there were present representatives of the Minneapolis Board of Trade and of the St. Paul Chamber of Commerce, to consider the proposition for Union Fair Grounds, etc., between the two cities.

Remarks were made by Hon. C. M. Loring and Hon. Wm. S. King, in behalf of the proposition of locating a park and fair grounds at or near Minnehaha. Capt. Russell Blakeley and D. W. Ingersoll spoke of the proposition to locate grounds for a fair and other purposes near the Union Stock Yards. It was not deemed advisable to take any action whatever in the matter; and the president stated, at the conclusion of the remarks, that the regular order of business would now be proceeded with.

Mr. Elliot moved that a committee be appointed to wait upon members of the legislature in session in the capital building, and invite them to view the exhibit of the Society.

Mr. Dartt objected to taking up time with outside matters which should be devoted to the regular order of business.

President Smith stated that the legislature had given the society a liberal appropriation, and it was expected that further appropriations would be asked for; and it was proper that the members of the legislature have an opportunity to see what the society is doing, and what it proposes to do. The motion was carried.

The chair appointed as the members of the proposed committee Messrs. Capt. Blakeley and Col. J. H. Stevens.

Mr. Dartt said that while the committee were performing the duty assigned them he would like to read a short article taken from the *New York Tribune*: "This is the time of the year when farmers' societies meet. Members go long distances to attend the meeting, leaving their work and expending hard-earned money to what end? To get the benefit of the experience of others and communicate their own. Each member has been working for a season in a different locality. If he stays at home he does not profit from the counsel of others, and others lose the results of experiments. I regard the discussions in which the members take part as the most valuable part of such meetings. More than half the papers might, with profit, be left unread. Many of them are of great value; but usually a member will consume half an hour or an hour when he should occupy less than five minutes; and his remarks would be far more convincing if

to the point than the advancement of mere theories. In horticultural meetings the prominent feature should be to furnish popular and interesting discussions. Every fruit grower desires to hear from the men who live in the orchards and berry fields. They desire to communicate their own views also. It is the same with agricultural journals."

Mr. Pearce offered the following resolution:

From the fact that knowledge is power and the growing of plants and trees is closely connected with botany, we recommend that all fruit growers should make botany a special study, especially those parts relating to their business.

On motion of Mr. Smith the resolution was adopted.

Mr. Sias. Mr. President, as long as we are on miscellaneous business, I would like to state to the convention that since I came to the convention I have received two communications from Rev. G. W. Fuller, of Litchfield, now our delegate to the Iowa meeting. The first was written November 18th. He writes that he was to start for Iowa, and expresses in this regret in regard to the handling or management of the Finance Committee's report. You will recollect that Mr. Fuller was the chairman of the Finance Committee last year; and you will also notice that in the report of last year our secretary states that at the close of the convention this report of the Finance Committee could not be found. He states in this letter that if the Secretary had wished to put it on record he could probably have easily found it by calling on our reporter, and he said that he would try and find the report. In the next communication he encloses a copy of the Finance Committee's report. I would say that I was a member of that committee and have looked the report over carefully, and I am satisfied it is a correct copy of the report of the Finance Committee; but I do not wish to take up the time of the convention to read that report unless it is called for. I have a copy here in my hands and if the convention calls for it I will read it, but I presume it is not necessary. But in order to satisfy our chairman I will move that this report be accepted, or put on file and be printed in the forthcoming report of our transactions.

President Smith. Before that motion is put I would like to have a few words to say. I thought that matter was settled last year; I cannot see the advantage at this time of bringing up that report. I would much prefer that that report be brought up and acted upon when Mr. Gibbs and Mr. Fuller were both present; I don't think we should act upon that report while they are ab-

sent. I think it better to lay it upon the table until another winter, when they will both be here, and then if there are any explanations to make they can make them. I cannot see any good in putting it upon the record at this time. To take it up when they are both absent it seems to me should not be done; that is the only objection. I have no objection to its going on the record.

Mr. Sias. Mr. President, in order that the members should have a knowledge of this business it seems to me that they should have the report and have it published so they can read it, and if there is nothing objectionable in the report its contents ought to be known; but if it is suppressed from the transactions it certainly is not using the committee exactly fair. It is nothing unusual and there has been nothing of the kind done before. It seems to me there would be no objections to having it read if it does not go into the transactions. The facts were misrepresented to the society, or they would never have voted on it as they did; I am satisfied of that. I think it ought to be read.

Mr. Dartt. Mr. President, just putting a report on record isn't anything new; it has been presented to the society and it should have been on record already; it is only supplying the record with a missing link. I don't suppose anybody wants to do anything about it only it should appear in print as presented by the Finance Committee, that is all. I don't see how there can be any objection to that.

The motion was then adopted.

- The following is the report referred to :

FINANCE COMMITTEE'S REPORT FOR 1884.

We think it our duty to the Society to call attention to one or two things, and the first of them is the very large expense incurred during the past year.

Especially those in connection with our exhibit at Philadelphia. Here are charges for \$215 for simply gathering the fruit, and then the expense of the delegate \$147, making a total of \$362. We do not say the exhibit could have been made for less, but think it ought to have been.

Another matter to which we call attention is that our constitution has been violated in two respects. The by-laws of 1878 provide that the Executive Committee shall in no case incur expense exceeding \$50, except by authority of the vote of the

society at its annual meeting when the specific amount so appropriated shall be designated.

And article third requires that the treasurer shall pay out funds only on order of the secretary, countersigned by the president. But the requirements have been disregarded the past year, as expenses have been incurred by the Executive Committee, much beyond that amount, and several orders have been sent to the treasurer signed only by the secretary and chairman of the Executive Committee. We would not say that this was for any wrong purpose, but we think the only safe course is to keep clearly within the constitution, and not allow a dollar of the money committed to us by the State for a specific purpose to be wasted or spent needlessly.

We recognize the activity and earnestness of our officers, and especially of our secretary and think reasonable compensation for our secretary should be allowed, but beyond this we think strict limits should be placed.

G. W. FULLER,
A. W. SIAS,
M. PEARCE,
Committee.

From Minneapolis *Tribune*, Jan. 18, 1884.

SECRETARY GIBBS' ANNUAL REPORTS.

The report of Secretary Gibbs was read and adopted. Also the financial report of the secretary, which was referred, without objection, to the finance committee.

STATE HORTICULTURAL SOCIETY.

DR.

Secretary's Statement of Expenditures for Postage, Office, Traveling and Incidental Expenses, for the year ending Jan. 12, 1885.

1884.

Jan.	8.	Postage stamps.....	\$1 00
	8.	Padlock for box.....	25
	12.	Postage stamps.....	1 00
	14.	Railroad fare to Minneapolis and return.....	4 55
	14.	Meals and incidental expenses for annual meeting, including two trips from Minneapolis to St. Paul.....	3 20
	15.	Expressage on books for annual meeting.....	50
	15.	Expressage on apples for exhibition at annual meeting....	50

	18.	Telegrams.....	1 05
	18.	Stationery for meeting	40
	26.	Kansas City papers of proceedings of Mississippi Valley Horticultural Society, and mailed to members.....	5 00
	29.	Postage stamps.....	35
	30.	Trip to St. Paul and Minneapolis.....	5 75
Feb.	1.	Postal cards.....	75
	1.	Ink and stationery.....	20
	1.	Stamps.....	52
	2.	Stamps.....	15
	4.	Stamps.....	1 00
	4.	Express charges on copy to State printer.....	25
	12.	Postage stamps.....	1 00
	12.	Express charges on reports.....	60
	16.	Postage stamps.....	1 00
	18.	Envelopes (stamped).....	56
	21.	Postage stamps.....	1 00
	22.	Mucilage (25c), postage stamps (50c).....	75
	26-27.	Trips to Minneapolis (\$2.55, \$4.55, \$1.60).....	8 70
	27.	Postage stamps and paper wrappers.....	2 24
	28.	Envelopes (stamped) (67c), postage stamps (50c).....	1 17
	28.	Postage stamps.....	75
Mch.	4-7.	Trip to Minneapolis in connection with printing report.....	6 00
	8.	Postage stamps.....	2 25
	10.	Trip to Minneapolis (reading proof).....	1 50
	11.	Trip to Minneapolis (reading proof).....	1 50
	13.	Trip to Minneapolis (reading proof).....	1 50
	14.	Expressage on manuscripts to State printer.....	25
	15.	Rubber bands.....	25
	22.	Trips to Minneapolis (reading proof) 17, 19, 21 and 22....	6 00
	26.	Expressage on reports.....	50
	29.	Trips to Minneapolis (reading proof) 24, 26, 27, 29.....	6 00
	31.	Postage stamps.....	1 10
April	1.	Sending out circulars (labor \$1, postage 50c).....	1 50
	5.	Trips to Minneapolis (reading proof) 1, 3, 4, 5.....	6 00
	5.	Postal cards.....	1 00
	10.	Postage on reports.....	7 00
	10.	Telegram from State printer.....	25
	12.	Trip to St. Paul and Minneapolis.....	1 50
	14.	Postage on reports.....	17 00
	14.	Expressage on Michigan report.....	1 25
	14.	Expressage on Minnesota reports from printer.....	75
	14.	Trip to St. Paul and Minneapolis.....	1 80
	18.	Postage stamps.....	32 00
May	13.	Postage (stamps \$14, wrappers 56c).....	14 56
	15.	Extra printing.....	2 75
	28.	Expressage on Minnesota Horticultural Reports	80
June	2.	Freight bill on reports.....	1 79
	2.	Drayage on reports.....	50

	2.	Postage on reports.....	5 00
	2.	Traveling expenses.....	1 00
	7.	Postage stamps.....	2 00
	7.	Postal cards for printing.....	2 50
	11.	Postage stamps for programmes.....	6 00
	11.	Postage stamps.....	2 00
	13.	Freight bill on reports.....	1 66
	24.	Traveling expenses, etc., to summer meeting.....	2 75
	26.	Drayage on reports.....	50
	27.	Printing.....	5 75
July	19.	Postage stamps.....	6 00
	22.	Expressage on Kansas Reports.....	1 40
	28.	Expressage on Illinois Reports.....	95
Aug.	4.	Postage stamps.....	1 10
	4.	Expressage on reports to C. Ludluff and Andrew Peterson.....	70
	20.	Expressage on reports to Iowa.....	1 10
	20.	Postage stamps.....	1 00
	25.	Postage stamps.....	2 50
Sept.	2.	Postage stamps for circulars.....	2 50
Oct.	23.	Postage stamps.....	5 00
	28.	Expressage on Montreal Reports.....	2 05
Dec.	29.	Printing circulars.....	3 00
	29.	Postage stamps for reports.....	10 00
Jan.	5.	Stamped envelopes.....	2 28
Total.....			<u>\$230 23</u>

CR. BY

1884.			
April	10.	Order on treasurer.....	42 95
	10.	Order on treasurer.....	36 59
June	18.	Appropriation for postage, etc.....	100 00
	25.	Order on treasurer.....	4 86
	25.	Appropriation.....	100 00
Total..			<u>\$284 40</u>

SUMMARY.

Total expenditures from Jan. 5, 1884, to Jan. 12, 1885.....	\$230 23
Total receipts from Jan. 5, 1884, to Jan. 12, 1885.....	\$284 40
Balance due Horticultural Society.....	54 17
	<u>\$284 40</u>
	<u>\$284 40</u>

STATE HORTICULTURAL SOCIETY.

Secretary's Statement of Receipts and Expenditures for the year ending Jan. 12, 1885.

Postage	\$134 28	
Traveling expenses as secretary.....	56 55	
Expenses of annual meeting.....	4 60	
Telegrams	1 30	
Stationery.	70	
Expressage	10 60	
Printing	11 50	
Freight and drayage.....	4 45	
Sundries.....	6 25	
Total expenditures	\$230 23	
Per order on treasurer		\$42 95
Per order on treasurer		36 59
Appropriation for postage.....		100 00
Order on treasurer.....		4 86
Appropriation for current expenses.....		100 00
Total receipts.....		\$284 40
Balance due State Horticultural Society.....	\$54 17	
	\$284 40	\$284 40

TREASURER GRIMES' REPORT.

The treasurer's report was then presented, and, on motion of Mr. Harris, referred to the Finance Committee.

The report of the treasurer was as follows:

To the President and Secretary of the Minnesota State Horticultural Society,

GENTLEMEN: I have the honor to submit the following report of the receipts and disbursements of the society for the current year ending Jan 20, 1885:

RESERVE FUND.

1884.		
Jan. 15.	Accrued principal.....	\$600 00
15.	Accrued interest.....	43 78
1885.		
Jan. 20.	Interest for the current year.....	38 62
20.	Reserve principal for 1884.....	200 00
Reserve fund, total.....		\$882 40

RECEIPTS.

1884.			
Jan.	15.	Balance in treasury.....	\$172 29
	15.	Of secretary membership fees.....	108 00
Feb.	20.	E. H. S. Dartt, one member.....	1 00
March	31.	Balance State appropriation, 1883.....	400 00
June	13.	State appropriation to July 31, 1884.....	500 00
	25.	Of Secretary Gibbs, membership fees.....	37 00
	25.	Harlow Gale (donated).....	5 00
Nov.	11.	Secretary Gibbs, for membership.....	11 00
	12.	A. J. Phillips, one membership.....	1 00
	15.	Secretary Gibbs, two members.....	2 00
1885.			
Jan.	17.	Of the State treasurer.....	500 00
Total receipts.....			<u>\$1,737 29</u>

DISBURSEMENTS.

1884.			
Jan.	18.	To Lake City <i>Graphic</i> , printing.....	\$17 35
	18.	Oliver Gibbs, Jr., balance on account.....	69 96
	18.	W. B. McHenry, printing.....	13 50
	18.	J. S. Harria, time and expenses.....	50 00
	18.	E. A. Cuzner, librarian's expenses.....	3 05
	18.	E. A. Cuzner, shelves for library.....	15 00
	18.	E. A. Cuzner, librarian's salary.....	10 00
	18.	M. C. Messner, reports.....	20 00
	18.	Oliver Gibbs, Jr., secretary, first quarter's salary.....	50 00
	18.	A. W. Sias, expenses on Seedling Fruit Committee.....	10 00
	18.	J. T. Grimes, funds advanced on account.....	81 00
	18.	Premiums paid at winter meeting —	
		On fruits.....	80 00
		Vegetables.....	7 00
		Canned fruits.....	9 00
		Fine arts.....	10 00
		Seeds.....	6 00
Feb.	20.	E. H. S. Dartt, delegate to Iowa.....	23 10
	23.	A. W. Sias, delegate to Wisconsin.....	4 75
	22.	Expenses Executive Committee to St. Paul.....	18 80
April	1.	M. Pearce, delegate to Kansas City.....	37 40
	2.	M. C. Messner, assisting the secretary.....	20 00
	2.	Oliver Gibbs, Jr., secretary, first quarter's salary increased.....	50 00
	2.	Oliver Gibbs, Jr., distributing reports and incidentals.....	100 00
	2.	M. C. Messner, balance for services.....	20 00
	10.	M. C. Russell, printing and stationery.....	13 50
June	13.	F. G. Gould, on order of Jan. 18, 1884.....	3 00
	2.	Oliver Gibbs, Jr., second quarter's salary.....	100 00
	25.	C. L. Smith, expenses at summer meeting.....	5 00

STATE HORTICULTURAL SOCIETY.

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25.	Harlow Gale, rent of hall.....	5 00
25.	T. M. Smith, president, incidentals.....	5 22
25.	Oliver Gibbs, Jr., postage.....	4 86
25.	Oliver Gibbs, Jr., for incidental expenses.....	100 00
25.	M. C. Russell, printing programs.....	9 00
25.	Premiums paid at summer meeting,	
	On fruits.....	29 00
	Flowers.....	29 50
	Vegetables.....	19 50
25.	Geo. S. Woolsey, special premium.....	10 00
25.	C. L. Smith, services as lecturer, being one-half of eleven	
	membership fees procured by him.....	5 50
April 10.	Oliver Gibbs, Jr., traveling and hotel expenses.....	42 95
10.	Oliver Gibbs, incidental expenses from Jan. 8 to April 10,	
	1884.....	36 59
Sept. 2.	Oliver Gibbs, Jr., third quarter's salary.....	100 00
1885.		
Jan. 20.	Reserve fund for 1884.....	200 00
20.	Treasurer's salary for 1884.....	25 00
20.	Librarian's salary for 1884.....	10 00
		\$1,479 43
	Balance in the treasury.....	257 86
	Total.....	\$1,737 29

REMARKS.

I would respectfully call your attention to the fact that the finances of the society are insufficient to meet the expenses and maintain the reserve fund which was placed by order of the society as a special premium fund to encourage the originating and dissemination of new varieties of apples, specially suited to supply the demands and wants of the orchardists of this State.

The fiscal year of this society commence at the annual meeting in January, whereas, by act of the legislature the State appropriations are paid semi-annually and become due on the thirty-first day of July and the thirty-first day of January, consequently we have now drawn the first apportionment for the year 1885; two hundred dollars, which I have placed to the reserve fund, from which it was borrowed by order of the society to meet the current expenses for the year 1884.

It must be apparent that we are not managing our affairs in a practical, business way; either we have undertaken to do too much for our means, or we are spending our money without an equivalent.

It is supposed that the officers of the society are paid a

reasonable salary for their services, but bills have been presented and orders drawn and signed by the proper officers which have not even been allowed and audited by an executive or finance committee.

I have particular reference to those in connection with the secretary's office.

My books show the following amounts to have been paid upon those orders during the current year:

For distributing reports.....	\$100.00
Traveling and hotel expenses.....	42.95
Reporter's services.....	60.00
Printing.....	53.25
Incidental expenses.....	211.41
Total.....	\$467.61

The amount, in addition to the office salary of \$400, nearly equals the State appropriation, and leaves but little, except membership fees, to meet the expenses and carry on the work of the society.

Compared with other years I also find that those expenses have more than doubled in geometrical proportion with each year since we have received aid from the State.

There was paid for incidental and other expenses contingent to the secretary's office for the following years, to-wit:

For 1881.....	\$16.31
" 1882.....	71.35
" 1883.....	202.03
" 1884.....	467.61

I have deemed it my duty to lay these facts before you, and would respectfully recommend that hereafter all bills for incidental or other expenses should be itemized in due form to be audited, allowed, and certified to by the executive or finance committee prior to orders being drawn upon the treasurer, and that no orders be allowed or moneys paid out by this society in advance of services having been rendered.

Respectfully submitted,

J. T. GRIMES,

Treasurer.

OFFERING PREMIUMS.

Mr. Dartt then offered the following resolution:

Resolved, That in offering premiums on apples especial prominence should be given to Minnesota productions; and in bringing out new varieties many premiums on separate plates of such fruits as are new varieties will be more likely to promote the end sought than offering large premiums on collections.

DISCUSSION.

Mr. Harris. Mr. President, last year, in order to draw out as large a collection of seedlings as possible, we made very liberal premiums on seedlings, at least compared with the means we had at our command. There was one premium, offered for a collection, of ten dollars, and one of five dollars, and at least five or six premiums on Siberians; premiums for all purposes—best sweet, best winter, best autumn, etc.; and I am willing that you should, and the society are probably ready to start in motion this action on the part of the society as to the arrangement of those premiums. We consider the encouragement offered towards the production of seedlings is an important matter. The agricultural society have always co-operated with us and given us almost everything we asked. There is no society hardly that gives one-half the premiums that we do. I am in favor of this. I move to amend that we request the agricultural society, in making up their premium list, to omit a premium for a collection of Siberians.

GRAPES AT NEW ORLEANS.

Gen. Jennison, secretary of State, here appeared and presented the following telegram from Mr. F. G. Gould:

EXPOSITION GROUNDS,
NEW ORLEANS, LA. Jan. 21, 1885. }

Gov. Hubbard, at State House:

Grapes awarded three silver medals, ten prizes in all; only medals except California; we break Ohio on Catawbas also.

(Applause).

Gen. Jennison. I judge from that that there are ten prizes offered and that Minnesota gets three silver medals, the only ones

obtained except by California, and that among them is the prize on Catawbas, which is ahead of the one which Ohio gets. I think, to speak as a politician would, that somebody must have "set 'em up."

Mr. Harris. The object of my amendment was to prevent the loading of our tables at our State fairs with something which is not sightly or ornamental, which has no educating influence and which does no good.

Mr. Dartt. Mr. President, what has been said in regard to crabs not being ornamental or useful, I think is a mistake; they are decidedly ornamental and decidedly useful, some more than others. There is no danger in this State, as a general thing, of getting too great an exhibit of fruit. The premium on the collection of crabs may be small, but let them bring them all in, so we will have a chance to test the different varieties. I think it is decidedly proper, as much so as it is to have a good collection of apples. If you want to exclude all varieties, offer premiums on the best plates. On these seedling apples the object is to have many premiums on separate plates, so that if there are twenty varieties that are brought in that are valuable, nearly all of them will get a premium,—first, second, third or fourth premium. I would have five or six premiums on the best winter apples, and I would place it pretty well up. You would be more likely to get the apple you are looking for in the next ten years than you will from your experimental stations, because it will take them ten years to bring out a thing and perfect it. Trees when young are hardy, most all of them, and as soon as they get a little old they die.

The question being upon the amendment of Mr. Harris, and a division being called for, the amendment was carried, eleven to nine.

Mr. A. W. Latham. I want to speak on the question. If the object is to make a large show of fruit rather than to make an exhibit of fruit for choice plates, I think you are taking the wrong course in passing the resolution.

Mr. Smith. The object is not to put it on a few choice specimens, but, if possible, increase the number of choice specimens by making a greater variety.

Mr. Dartt. This relates to seedlings and new varieties.

Mr. Latham. There are many who grow more varieties of crabs, and many would like to compete for premiums; but if it is known that one has a large number of them, he will not exhibit

his varieties, because if he does not get the first premium he cannot be at the expense of getting up an exhibit. You offer, for instance, ten dollars for the best collection of varieties on exhibition, but the ten dollars will not pay for the expense. The apples are all right, but they are of no value after they have been exhibited. Perhaps you may have put up forty varieties. If you increase the premium for a general collection, or offer a premium that will cover the largest exhibit, and make four or five that are all respectable, those collections, every one of those, will show you thirty or forty plates. They should not be counted unless they are creditable exhibits. This exhibit here of grapes, of course, has been kept with a great deal of difficulty. Fifty dollars in premiums, for a general collection, will draw out ten times as many plates as the same amount of money offered in premiums for single specimens.

The resolution of Mr. Dartt was then adopted.

Capt. Blakeley. Mr. President, your committee have visited the honorable Senate and House of Representatives; the Senate accepted the invitation of the association; the House was engaged in important discussion at the time, and the speaker informed me that he would announce the invitation, and no doubt it will be accepted and they will visit us.

Mr. Harris moved that the society request the State Agricultural Society, in making up their premium list, to give a separate class exclusively for the new Russian varieties, offering premiums for collections and for different varieties that are known to be cultivated in the State.

Mr. Dartt. The resolution that has been passed already covers that ground. All new varieties, it don't say seedlings; it was intended for new varieties, Russians and seedlings.

Mr. Harris. I am in favor of having the Russians shown in a class by themselves, and to have the seedlings in a class by themselves, and to have liberal premiums given on each. You will accomplish far more good in that way, and that is the reason I make this motion. While classed in that way, in the sweepstakes in their class they would not be permitted to come in.

The motion was adopted.

Mr. Whipple. I would like to say one word about striking out all of the crab class. Now, we have had a decision in our courts within two days that I believe will make us trouble. You all recollect the case where a pair of mules were stolen in Hennepin County within the last year. On our statute books we have

a law providing for two hundred dollars bounty for the detection of horse thieves. The thief was captured that took the mules, and the man that captured him applied for the bounty, which was refused, and he carried it to the supreme court, which has just decided against him that mules are not horses. Now, you are trying to strike out a variety of apples entirely and offering premiums on the new seedlings. If you find an apple that is the least crab, you strike it from the list; and so I think you will have to strike out nearly all of your seedlings.

President Smith. We have not struck out the crab apples.

Mr. Smith. They simply strike out the one premium on the largest collection of crabs in order to put it on the other premiums.

Mr. Sias. I wish to say that our secretary of the Olmsted County Horticultural Society made us a good report last year, and it was handed to the secretary of this society and a vote taken to have it filed for publication with the transactions of the society, but whether it was lost or suppressed I don't know; and I wish our new secretary, whoever he may be, may be instructed to try and find that report and have it inserted in our next report.

Mr. Smith. We have already voted to do that.

ANNUAL MEETING OF THE OLMSTED COUNTY HORTICULTURAL SOCIETY, 1884.

ADDRESS OF J. S. HARRIS, OF LA CRESCENT—ELECTION OF
OFFICERS, ETC.

[From the Rochester Post of Jan. 4, 1884.]

The annual meeting of the Olmsted County Horticultural Society met at Good Templars Hall on Saturday afternoon of last week, Vice President Sias in the chair. But a very few members were present to listen to the very interesting and instructive address by Mr. J. S. Harris, president of the State Horticultural Society, consequently we publish it in full. The speaker said:

Mr. President and Gentlemen:

It is with pleasure that I meet with you in this your thriving city, which is noted far and near for beauty of situation

and for the intelligence, enterprise and hospitality of its people. Rochester has become the metropolis of the most fertile and prosperous county of this State. But nothing brings up to me more pleasing associations and hallowed memories than the fact that this city is the first in the State where any organized and systematic efforts were made in horticulture, and that it was here that the Minnesota State Horticultural Society had its birth, and that here I have met with her people at six State fairs and one Southern Minnesota fair and exposition, where has been made the grandest horticultural exhibits ever seen in the State of Minnesota. We have assembled together to-day to engage in the means to promote an art that is suited to man's highest destiny. It is an art that is calculated to afford the intellect abundant themes to which a patriarch's long life might be devoted with increasing gladness, for it extends above, around and beneath us; its beauties are without limit, its varieties without end. There is no human science that is so ample in its range, so attractive in its allurements; there is no occupation of man that is so ennobling, or that brings him so intimately in connection with nature and nature's God. Its votary has the wide world of beauty unfolded to his view as a living landscape. Both as a science and as an art, horticulture, if it be properly appreciated, is abundant in its resources. It has numbered among its votaries the wisest, ablest and best men of all ages and of every nation. They have gathered, transferred naturalized and adapted to our uses whatever of earth's products can please the eye, satisfy the appetite, or regale the senses, or is of any use whatever in sustaining life or promoting the happiness of man, and it is their enviable occupation to "dress and keep" them according to the divine command what they have thus gathered and arranged. A boundless theme is here presented. It is the application of the art. It is to sow and plant, to prime and train, to transplant, to propagate by grafting, cutting, layering and mulching; and connected with these operations are remarkable phenomena that lead the mind to pleasing and elevating thoughts, for it may thus dwell on many of the most interesting pages of the book of nature. An art that is so abundant in its resources and that has occupied the meditation of the learned for past ages is worthy of at least a little of our consideration. It is the art that means gardening of every kind the world over, gardening by the orchardist, the vineyardist, the florist, and the tree-planter; it includes the

amateur and the professional cultivator, the market gardner with his broad acres, and the poor woman with one solitary geranium in a broken crock. The science covers alike gardening for profit and gardening for pleasure; gardening of whatever character and wherever found. This art has made wonderful progress in this country in the last half century, and very much of this progress is due to the victorious power of organization. The achievements of individuals may be very great, but if they are not made the common property of association, the secrets may perish with them, or be as lights hidden under a bushel. No man is so wise and so old in wisdom that he may not learn from others. Few men are so inexperienced that they cannot impart some strength to an organization or do some good to their fellows. No being is so strong that the strength of another, in some emergencies, would not be a help to him. Every man is supposed to know something and to know it better than others, and it is a great and good thing for a man to find his true place in society and properly fill it. He thus finds his true use antagonizing no one and yet helping every one. In all well organized bodies of workers each member not only brings to the meeting the experience he has gained in his avocation, but he shows a disposition to help others, and if differences arise, in brushing against them he may get some sharp angles knocked off, but he will return home a better informed man, and if he has had a good time, as he ought, he will be younger in heart. The study and practice of horticulture, or any other noble subject that brings man in contact with nature, inspires a tendency to keep the heart young. Those who belong to such associations and attend the meetings will become students, and there is nowhere a better opportunity afforded to acquire a practical education.

Mr. President, horticultural societies have a mission in this county and the whole of Minnesota; they have a great work to perform, and the demand is imperative that our best workers should come to the front and enter immediately upon the work. Let learning, genius and talent come forward and join with practical skill and indefatigable industry in solving the gigantic problems of the hour. Whether we realize it or not, there is a peculiar need for the work. In agriculture, commerce and manufactures, our State is making unparalleled progress and commanding the attention of the whole civilized world. In only one thing is she behind the most favored countries, and that is horticulture. Our grain fields, our dairies, our sheep folds, and our

lakes, rivers and brooks, stocked with the best of fish, all bid defiance to grim want, and with only such an amount of skillful labor bestowed upon them as is necessary for the perfect physical development of our natures, the earth yields up her treasures, and we have bread enough, and to spare. When horticulture is fully developed; when we have fruit enough, all of our own raising;—the luscious apples, melting pears, and grapes that hold the wine in the clusters—when every farm has its orchard of fruits, and well kept gardens of flowers and vegetables, its lawns and shade trees; when our country school houses shall stand upon ample grounds and be surrounded with trees and shrubbery to break the chilling blasts of winter and impart cooling shade in summer, and grassy lawns and beautiful flowers greet our children upon their play-grounds and shed a fragrance about their lives; when the broad prairies are dotted over with groves and forests, and stately trees adorn our highways, to afford comfort and shelter to the weary traveler, and bid defiance to the tornado and cyclone, then shall Minnesota be the best and most desirable spot for a home that the sun ever shone upon. All these things must be supplied and brought about through the agency of horticultural societies.

Now the question I ask is: When shall it be done? Very soon or far away in the future, after we and other generations have passed away to our rest? Now is the time to enter upon the solution of these questions, and I would that I were able to stir up your minds to enter upon them with such zeal that our horticulture might quickly overtake and keep pace with our progress in all other arts and avocations. The first important factors in the work are education and organization. Secure the latter, and we will find the first following close in its tracks. We need a live horticultural society in every county, if not in every town, in the State, that shall meet every month and devote an afternoon or evening to the consideration of these subjects. You have a society here. Permit me to ask: What have you done, and what are you doing? If you have done what you could and should, you stand as a beacon light to show others the way to success. You and every farmer in Olmsted County, and every householder with one rod of ground, and every citizen who is interested in the future growth of this city and the development and prosperity of the county, and the happiness of this and future generations, ought to cherish your organization and throw into the Olmsted County Horticultural Society your combined

strength and talent. One of the most efficient means for solving some of the difficult problems is by experimental stations, maintained under the fostering care of horticultural societies. A few men in your county are raising some varieties of fruit, and are perhaps raising it successfully and profitably, but the majority are not. Thus far there are but two or three varieties of apples that are doing reasonably well with the masses of the people, and they supply only a small part of the season during which apples are wanted. To secure varieties to cover the remainder of the season, large sums of money have been paid out to nurserymen and tree venders for trees, and the result has been only disappointment and vexation, and you have had to do without the anticipated fruits or purchase them from some more favored locality. Now if I believed that the climate and soil of Minnesota would forever prohibit the raising of apples and similar fruits in quality of the very best and in quantity adequate to the wants of all our people, as much as I admire it for everything else, I would get out of it as quick as possible and cast my lot with some other people.

Gentlemen, we have the Duchess and some good descendants of the Siberian species that are hardy, and from them, were there no other alternative left, it is possible to secure the rest. But we have other means at command, and should avail ourselves of them promptly. As early as 1866 I made the statement upon the State fair grounds in this city that I believed it lay in our power to make this one of the best fruit or apple producing states in the Union, and I have repeated that statement every year since, and I shall never cease doing so while my life lasts or until I see the promise fulfilled. I believe in the statement, and because I believe, I have given the subject study and the work of the best years of my life. I have not accomplished much. In such work few men can, single-handed and alone, but I do hope that I have planted where others shall reap.

I have somewhere read that he who originates a new and valuable fruit suited to general cultivation is as much a benefactor of mankind as he who discovers a new principle in science which adds to the comfort and happiness of our race. The names of the men who invented the steam engine, the telegraph, the reaper, the sewing machine, and other modern appliances will not be held in more sacred remembrance than will those who finally originate and disseminate hardy varieties of fruits that will prove perfectly adapted to this State. It is to modern

science that the world is indebted for those wonderful discoveries and inventions, and modern science has made it possible for us to produce and reproduce and change at will the products of the earth. Knight, Herbert, Lindley, Darwin, Gray, Bull and other teachers of our day have given us lessons of wisdom which will enable us to prosecute the noble work. It has often been asserted, and is pretty generally believed, that tender exotics may by degrees become accustomed to colder climates and thus become acclimated. Many plants, it has been asserted, which were not originally so, had become hardy. Now, while many plants have the power of adapting themselves to new conditions, I do not suppose it is possible to make a species of plants hardy that were not originally so. It is a law of nature that the stream cannot rise above the fountain head. I claim that the apple tree was originally hardy enough for this climate, and that the losses that occur here should be attributed to some other cause than the severe cold of our winters. Were they not so, they could not grow and yield fruit in Northern Europe, where the cold is much more intense than here in Minnesota. All plants have certain peculiarities and are capable of certain modifications, and it is in the power of man to control these peculiarities, and, in a manner, to cause production by the selection of those which promise well, and continuing the selection with great care through several generations of seedlings, and by that means, and that only, a variety may be originated with peculiarities suitable to a certain climate.

The recent explorations of Budd and Gibb in Northern Europe give us strong assurance of final success, because we learn through them that that inhospitable climate does not debar its inhabitants from enjoying an abundance of such fruits as the apple, pear, plum and cherry. Tradition tells us that those fruits were advanced from further south, and that, too, without that aid which modern science has placed at our command. The climate of that country is so much more inclement than ours, that many of our fruit growers believe the question already solved, and that we have only to wait until trees can be grown here from cions procured there, and they will no longer make an effort to produce what they need by originating Minnesota seedlings.

Mr. President: If this course is pursued, I fear that we are very far from the end. If our farmers plant their orchards with those Russian varieties, with the expectation of having good,

hardy, long-keeping varieties, and thrifty, productive orchards, there is danger that they will be doomed to disappointment. I tell you, the whole thing is an experiment and should be treated as such until we have some certain knowledge of their adaptability to our wants. The experiment may prove but little better for supplying present wants than that of the plants of our orchards had been to Baldwins and Greenings. It is the seedlings of these, crossed with our best Minnesota varieties, that are to give us our future orchards and earn for our State an enviable reputation for the beauty and quality of her fruits. It has long been known that varieties originated in certain localities and soils are generally better suited to those localities and soils than those introduced from other places, and our own experience has demonstrated that there are comparatively few of the good varieties of other countries that are anything like a success with us. An all-wise Providence has provided for perpetuating species. The little seed, when brought under favorable circumstances, sends out roots to penetrate the soil to gather up moisture and food, and a stem and branches and leaves and flowers and seeds to elaborate the secretions and acquire qualities that shall enable the coming tree to become adapted to the condition under which the seed was produced. Therefore, the true principle for us to pursue is to save and plant the seeds from our hardiest and best varieties, either hybridized or cross-fertilized with Siberian or Russian varieties. Always saving from both parents those having some characteristics we wish to perpetuate in the offspring, and each generation so produced will become more "at home" under our climatic conditions.

I do not think that I stand alone in my opinions upon this part of my subject; but doubtless what I have said will receive some severe criticising. In closing this part of my subject permit me to quote from the address of the venerable Marshall P. Wilder, president of the American Pomological Society, at their late meeting. In speaking of the production of new fruits he said: "It is now more than thirty years since I first called the attention of this society to the importance of producing fruit from seed in order to originate and obtain such varieties as might be adapted to the varied climate of our ever increasing and immense territory. Thus have I spoken for a long course of years of the importance of this branch of our duty. Thus would I preach while life lasts. Plant the most mature and perfect seeds of the most hardy, vigorous and valuable varieties, and,

as a shorter process, insuring more certain and happy results, cross and hybridize our finest kinds for still greater excellence."

" Plant the best seeds of every good fruit.
Good fruit to raise, some lands to suit;
Fruits which shall live their bounties to shed
On millions of souls when you shall be dead.
These are creatures that do the world good.
Treasures and pleasures, with health in your food.
Pleasures which leave in the memory no sting,
No grief on the soul, no stain on time's wing."

I have before alluded to forestry as part of the work of horticultural societies. Forest trees are known to exert a favorable influence on the climate, and a beneficial influence on fruit culture and gardening, and they are so essential to the comfort and safety of man, that their planting and encouragement present a worthy subject for our consideration. I have never felt its importance so much as since the great cyclone of the twenty-first of last August, destroyed a portion of your beautiful city, striking terror to the hearts of all, and causing much suffering and loss of life. Shortly after that event I spent a few hours in making observations over the scene of destruction, and from what I observed, I am satisfied that forest trees are the greatest boon that can be given to portions of this State. Among other things, I observed that buildings surrounded with screens of cottonwood and other timber suffered less than where there were no trees, and in some instances escaped with only slight injury, and I am satisfied in my own mind that it lies in the power of man to avert much of such fearful calamities. If, twenty years since, or even ten, there had been planted and cared for twenty acres of fast growing timber, such as cottonwood and willows, upon every quarter section of land for ten miles up the Cascade Valley, and, in addition, trees had been planted about the farm buildings and along the roadsides, that terrible storm would have passed almost harmlessly over you. If the saving of human life and property from such destruction, if comfort, happiness, and a feeling of security are of any account, let it stimulate you to encourage the planting of trees upon every farm and along every highway in the county. They will not only serve as a protection, but will enhance the value of property, and lend charms to the country, and, by judicious selections of varieties will, in the course of time, prove more remunerative than any other crop

raised upon your farm. As an instance of their value for protecting orchards, I will refer you to the orchard of Amos Welch, upon Greenwood prairie, which, in spite of the winds and tornadoes, were, on the sixteenth of September, literally loaded down with as fine fruit as I have seen in any of over one hundred orchards I have visited in the past season.

I had much more that I had desired to say to you, but your time is too precious to be spent in listening to such feeble efforts as mine. Remember, that you are called to do a great work. Do it well. Give your horticultural society support. Work to have its benign influences spread over the whole county, until every man, woman, and child shall have received good from it. Discuss every horticultural topic that has any bearing upon the welfare of the people of county or town; conduct experiments in the originating and propagating new and valuable fruits; encourage a higher education and a nobler home life; work until your mission is fulfilled, and every farm has its forests and groves, orchards and gardens, and the whole land shall blossom as a rose, and every home shall be surrounded with such attractions that no temptation shall be strong enough to lure away the inmates to dissipation and vice; and when you have done with the work, you will leave a goodly heritage for future generations.

On motion, a vote of thanks was tendered to Mr. Harris for his able address.

Mr. Harris said he was disappointed to find so few of the farmers of the county present, and advised the association to hold meetings more frequently than they had been in the habit of doing. Some topic should be selected for discussion at every meeting and an effort made to get the ladies interested in the cause. Fairs could be held at the same time and farmers given an opportunity to display their products. At La Crosse, Wisconsin, they have papers read, followed by discussion on some of the more prominent features of the paper read, and vocal and instrumental music by ladies and gentlemen. They have a large attendance. He said that in some places picnics are held under the auspices of the society in summer. In Illinois some of the best speakers in the State are engaged in working up these societies. He said there should be a thorough reorganization of the society before next spring.

Mr. R. Porter said that the society should first undo things that had been done by some nurserymen in the State. While he

did not wish to cast any reflections on any nurserymen here, he thought a great many poor trees had been sold, and a great many farmers discouraged thereby. He was selling trees in Minnesota and Dakota, and handled nothing but what he knew to be good. He expressed a decided preference for the Duchess, Elgin Beauty, Wealthy, and Rollins Pippin apples. The Wealthy was first grown at Lake Minnetonka, this State, and was a splendid variety. Ten per cent of the trees would bear the second year. Crabs are nearly all hardy varieties. He had met with some opposition in Dakota from nurserymen in this part of the State. He had put but fifty acres of apple trees in Dakota, and thinks they will do as well there as here. We have got to sell our trees to Western farmers. In a short time we cannot raise apples enough to supply our home market. Trees born here are all right, but should be crossed with other good varieties. Russian fruit is worthless here for winter. The Elgin Beauty is a good fall apple, also the Wealthy. He thought the Rollins Russet a good keeper, but it blights sometimes; is a good bearer.

Mr. Harris said he came to the conclusion that there was no genuine horticultural society here. Horticulture includes everything in the fruit and vegetable line. There are twenty varieties of apples that do well in Minnesota, and the society should bring them out. A good society will bring new varieties to notice. By all means get the ladies interested in the raising of flowers, etc., and reorganize your society.

Mr. Hoag asked Mr. Harris if he had any plan for bringing out hardy varieties.

Mr. Harris replied that he would select seed of the hardiest variety. You should have an experimental farm and test your trees. If you find anything better than you have, get it.

Mr. Sias had been experimenting with Minnesota seedlings several years, and at the last session of the Minnesota State Horticultural Society had been placed on a committee on Minnesota seedlings. He had traveled quite extensively over the State and was well satisfied with the seedlings examined. He found a new variety in an orchard near St. Charles, the fruit of which is as large as the Duchess, and keeps well. The tree stands on a high prairie with a southern slope. The tree was planted some time ago by a man now living in Dakota, and he would correspond with him and ascertain more about the variety, and report hereafter.

Mr. Harris said he had a seedling grafted with Talman Sweet,

the fruit of which lasts until May, and is a good eating and cooking apple. It blights some, but he thinks it can be improved. On motion, the meeting proceeded to the election of officers for the ensuing year, with the following result:

President—A. W. Sias.

Vice President—H. Porter.

Secretary—S. W. Eaton.

Treasurer—M. J. Hoag.

Executive Committee—A. W. Sias, M. J. Hoag, R. L. Cotterell.

Mr. Eaton suggested that the executive committee talk to farmers and try to persuade them to turn out at these meetings. A program should be arranged, consisting of reading, discussion, music, etc. He thought a good attendance could be had if it was properly worked up.

On motion the meeting adjourned, subject to the call of the president.

Mr. Dartt. I would like to take up the revision of the fruit list; if we don't get to more than one apple, that is so much gained.

President Smith. Is the committee appointed at the last meeting to revise the fruit list ready to report?

Mr. Smith. I want to tender Mr. Cutler a vote of thanks. His report is worth a hundred times more than any theory of a professional fruit grower on this subject. He was a farmer, and has succeeded by means of hard work; he has gone about it in a proper way. I don't believe in selling men strawberry and raspberry plants and fruit trees, and telling them they can grow them without any attention. Raspberries need care and protection and if they are not taken care of they will freeze down every winter. I don't believe in selling strawberry plants and telling men that they are going to raise a lot of berries when I know that at the end of two years they will not have any plants left. Mr. Cutler has written us just exactly what is needed for the people of this State, and he has told us in a plain way how he handles small fruits, and for this reason I want to give his report special mention, and I hope that the press of this State will give it as wide a circulation as possible.

Col. Stevens. The soil of McLeod County is very productive and adapted to raising fruits of any kind, and there is no

better in the State. I raised berries there years ago and I can do it again, and everybody else can, and they can raise apples too.

Mr. Smith. I don't think the soil of McLeod County is one whit better than other counties throughout the State.

Mr. Isaac Gilpatrick. I wish there should be a premium on strawberries, raspberries and currants; there don't seem to be any premium offered for those; we all talk at random, we want to know what the ground is. In Massachusetts, where I used to live, there was always a premium offered for the best fruit, and they had to state how it was raised, on what kind of soil, etc. I don't wish to put this as a motion, but I wish there could be some premium offered for small fruits. I wish that we could arrange so that we should know how they were raised, so that if a person has sandy soil he would know how to proceed; if it was wet that he would not need to mulch. My neighbors don't understand it, and they lose their crops. Couldn't something of that kind be done to help us out? There used to be a premium, but they never stated how the crops were produced, what climate and soil.

Mr. Tuttle. What kind of blackberries do you grow?

President Smith. We grow very few of any kind. Last year I saw very few in our markets. Mr. Ford here has raised more than anyone else; he can tell you, perhaps.

Mr. Tuttle. For a good many years I had the opinion that we could not grow blackberries successfully on account of the hot sun and want of shade. I set two plants in the orchard row some years since, and left them there; I didn't consider them of any account and never expected they would amount to anything; but in about two years from that time I picked sixty quarts of blackberries, and the plants had spread over a rod of ground. The second year after that I gave them no cultivation whatever; they were partly in June grass sod. They were the Ancient Briton. That year I had two hundred and fifty quarts on four rods of ground, and that was without a particle of cultivation. Now, there are other blackberries that have been made prominent and are generally considered better than the Ancient Briton, and where they are growing blackberries extensively. One man had eight acres last season at Berlin, Wisconsin. They grew Stone's Hardy or Snyder, but they give preference now to Ancient Briton. I can grow them better than you can grow raspberries. At Ripon they make a business of it. One man

goes along and puts a spade down on one side and throws a little dirt on the plant. I concluded to give my plants a little protection in the way of throwing some damp hay over the top of the plants. I put a trellis along by the plants and dropped a little wet hay on top. Two years ago this winter we had the coldest winter we have had, with one exception, for twenty-five years, and they were hurt some; but they didn't kill as badly as the Snyders; the Snyders kill to the ground, but I conclude that I can grow 10,000 quarts to the acre of that blackberry, and it is a better blackberry than the Snyder or the Lawton. Ordinarily I can grow them without any protection. I concluded to let them take their chances. Only once since I have commenced growing have I lost crops by winter killing. My soil is a rich prairie, black loam, heavy clay down two or three feet deep. There are places on my place where I grow these berries, that the black soil is three or four feet deep; they don't do as well on that kind of soil as on heavier land. I don't make any difference in location of ground, whether to the north or to the south. My land is rolling land. You need not trouble yourself about slopes, but I prefer, or would rather have, a northern slope than a southern slope to keep them protected from the sun. I think they suffer as much from the heat of the sun as from the cold of winter. I examined my blackberry plants a week ago, and they appeared to be perfectly sound. They had thawed out and the wood didn't show any injury whatever.

Gen. Le Duc. Do you grow blueberries or huckleberries?

Mr. Tuttle. We grow them wild, but not where I live; the soil is not quite poor enough.

Gen. Le Duc. Have you ever transplanted them?

Mr. Tuttle. No, sir. We grow plenty of cranberries, and there are blueberries in abundance.

Mr. Harris. I will make a further statement on blackberries before the close of the meeting. It is now time to adjourn. I wish before we adjourn to call our brother horticulturists' attention to a new agricultural and horticultural paper which has been started in Minnesota, called *Farm, Stock and Home*, published in Minneapolis, semi-monthly, at the moderate price of fifty cents per year. If we would make this our own paper, and let our State pride reach forth and write for it, and get subscribers for it, and give it a circulation of 50,000 or 75,000, we would be doing a good thing and get a paper that could not be surpassed in the Union. We have talent enough in the State.

If we subscribe for this paper and make it our own, and make it the medium for the advancement of agriculture, we can advance it almost as fast as we can in our annual meetings. Col. Stevens, of Minneapolis, who has been the head and front of agriculture in the State of Minnesota, who sowed the first wheat sown in Hennepin County, and who went to McLeod County and opened a farm in the Big Woods, is the agricultural and horticultural editor of the paper, and this society I know indorses the colonel. Don't let us let the paper die out because we don't lend a helping hand.

Prof. Porter. There are a number of persons who have applied for membership of the State Amber Cane Association; those who wish to hand in their subscription can do so, and they will be entitled to a copy of our report of the proceedings when published.

President Smith. I wish to announce that we have received a telegram from New Orleans in regard to our grapes, and Prof. Porter, who is here, will give us an account of our fruit exhibits immediately after the meeting is called together, or immediately after the election of officers this afternoon, and I think there can be nothing of more interest to the members of this society than the professor's statement.

Mr. Sias. I want to say one word in regard to this new paper. I have been very much interested in this paper. I have taken it from the start. I think the first copy was issued about the first of November, 1883, and I have read every copy up to the present time. I think every member should have a copy.

On motion the meeting then adjourned till 2 o'clock P. M.

AFTERNOON SESSION.

THURSDAY, JANUARY 22, 1885.

The meeting was called to order by President Smith at 2 o'clock P. M.

Col. Stevens. Mr. President, in view of the probable change of the commissioner of agriculture at Washington, I would move that this society and the State Amber Cane Association recommend the appointment of ex-Governor Norman J. Colman, of St. Louis, for commissioner.

The motion was adopted.

Prof. Porter was then called upon to give a description of the exhibit at New Orleans.

Prof. Porter then addressed the meeting at some length, giving a description of the New Orleans Exposition, and especially of the Minnesota exhibit. A vote of thanks was tendered him, and he was requested to furnish an article upon this subject for publication.

The report of the Finance Committee was then called for. The following is the report:

Mr. Elliot, from the committee on finance, presented the following report: The finance committee would respectfully report the following: That we have examined the accounts and vouchers of the treasurer, and find the same correct. We have examined the reports of the secretary, and, as far as we are able to determine, the same is correct. We find a greater expenditure of money than the funds of the society will warrant. We fully indorse the suggestions made in the treasurer's report, and recommend that the expenses in the secretary's office be materially curtailed. Respectfully submitted.

WYMAN ELLIOT, Chairman.

On motion of Mr. Whipple the report was accepted and adopted.

QUESTION BOX.

The Question Box was called for, and Mr. Smith read the following question: Are summer meetings of the Minnesota State Horticultural Society a failure?

Prof. Porter. No, sir; they are not. I would rather have one summer meeting than half a dozen winter meetings, conducted as our meeting was two years ago, and as we intended our meeting should be conducted last year, but it failed. We should devote about half of the time in a visit to the vineyards and in experimental work. I tell you that we will learn more by seeing the actual work of the men who come here and tell us how they do it than we will learn in ten times that amount of time by hearing them talk about it. I would rather have one hour in a man's garden than to hear him talk ten hours. That is my reply to the question.

Mr. Smith. I have a proposition for three summer meetings;

one in connection with the Olmsted County Horticultural Society, one at Mankato, and one at Minneapolis. I believe the summer meeting to be the most profitable meeting we have; but I don't think we ought to have it at Minneapolis or St. Paul. I think we ought to have one over at Mankato. They raise lots of fruit there. I was down there, and I found they were raising a great many strawberries and raspberries, apples, and everything of that kind; and we want to wake them up down there—arouse them to action and get them to organize. I don't consider the summer meeting a failure by any means.

President Smith. I would suggest that a vote be taken whether there will be a summer meeting or not.

Mr. Smith. I move that we hold one or more summer meetings.

The motion was unanimously adopted.

Question: Does manuring apple trees prolong their life and usefulness?

Mr. Whipple. I would like to have it understood what constitutes manuring and fertilizing, and the kind of compost?

Mr. Pearce. Mr. President, I think the value in manuring of apple trees depends altogether on the condition of the trees. If a tree is bearing heavily I think it ought to be fed; but if not, it ought not to be so well provided with food.

Mr. Harris. Would you not modify that and say, if it is making a strong growth?

Prof. Porter. It depends upon the amount of nutriment you have for the organic support and growth of the trees.

Mr. Smith. The next question comes from Mr. Cutler. He inquires what would be a just and reasonable commission for selling strawberries in St. Paul and Minneapolis.

President Smith. I would state that no commission man can handle and sell perishable fruit and do it safely for less than ten per cent; a man that attempts to do it for less will be very likely to go under or be compelled to make false returns. I do not mean to retail the fruit, but am speaking of the wholesale trade and handling by the case. One cannot do it for less than that and handle the fruit honestly and fairly.

Question: What is the most convenient and economical receptacle for handling and shipping strawberries, and what is the cost thereof?

Mr. Smith. The square quart box I think is the best and of the size for the sixteen quart crate. The cost is four to five

dollars a thousand for box material and ten cents for a sixteen-quart crate and twelve cents for a twenty-four-quart crate.

President Smith. I would recommend the boxes made at St. Joseph, Michigan; they cost three dollars and fifty cents there. For the sixteen-quart crate the cost will be six dollars and fifty cents; the twenty-four-quart will cost eight dollars and fifty cents and ten dollars there at the factory. They give better satisfaction, come cheaper and are very generally adopted by those who handle goods on commission. The best way to handle berries is to let the boxes go with the fruit. This is the square box and it holds a full quart, dry measure. I would move, if in order, that this society recommend and adopt the full quart or dry measure.

Mr. Whipple. I would second that motion. I know there has been a great deal of trouble in years past in getting what is supposed to be a quart; for when you would measure the berries there would be no more than a pint and a half. I am in favor, when we sell a quart of berries, of giving good measure. If we get the Sherman box we get a full quart.

President Smith. You are not certain of that, for they manufacture both kinds, the wine quart and the other size. In sending orders for boxes you should state whether you want the full quart or they will send the wine quart.

Mr. Pearce. Do you mean a full quart inside of the box or outside?

President Smith. They make a box that will hold an exact quart, salt or dry measure.

Mr. Pearce. There are boxes that hold a quart from the outside and the cost is about two dollars and fifty cents a thousand.

Mr. Harris. You have heard the motion that this society recommend and adopt the full quart boxes for the handling of the strawberry crop.

Col. Stevens. Suppose I go into the market and buy two or five quarts of berries, do I not, nine times out of ten, get a full quart of berries?

President Smith. You do in the St. Paul market, for here they make it a finable offense to sell less than the full quart.

Mr. Pearce. What is the weight of a quart of berries?

President Smith. That is a question which it is impossible to answer; the weight varies according to the variety of berries. They give the dimensions in the circulars of the St. Joseph manufactory. I have dealt with them a good many years and

found them prompt in filling orders and gentlemanly in their treatment of customers.

Mr. Tuttle. I have used these boxes for a good many years; have used both kinds. The full quart is a lower box than the others; it has less open space. I find the full quart boxes, when the berries are put up so as to fill them full, will settle down. They don't look as well as when put up in the other boxes, for they heap the berries, putting on all they can lay on, and set the boxes on each other. People would rather see boxes heaping full than not full, but I don't think they get any more fruit than where it is put into the other boxes. I find it the uniform practice, in using boxes of the larger size, not to fill them quite full.

Mr. Harris. I would state that Wells & Co. are manufacturing a box that you want to round up; also we have the wine measure. Dealers will buy by one measure and sell by the other, and in that way will make about every sixth quart.

Mr. Busse. A good many strawberry growers here use the half bushel.

Mr. Harris. I don't approve of selling them in that way for the dealer will always want to make about forty quarts to the bushel.

President Smith. I don't say that the berries put into those boxes are all full quarts, but I believe them to be the nearest to the exact seal measure of anything that we can get; consequently I have no hesitancy in recommending them.

HENNEPIN COUNTY HORTICULTURAL SOCIETY.

Mr. Smith then presented a report from the Hennepin County Horticultural Society.

First annual report of the Hennepin County Horticultural Society, organized February 16, 1884, at Market Hall, Minneapolis. A temporary organization was effected by the election of M. Pearce, chairman; W. H. Brimhall, secretary. At the second meeting a permanent organization as follows:

President — M. Pearce.

Vice President — C. L. Smith.

Secretary — W. H. Brimhall.

Treasurer — H. F. Busse.

Executive Committee — J. S. Gray, G. S. Woolsey, E. M. Chandler, Wm. Lyons, G. H. Roberts.

It was voted to hold meetings every Saturday afternoon during the winter, for reading essays and discussions. These meetings were continued until April 1st, after that the last Saturday of each month during the summer months. The meetings were well attended, and much interest was manifested in the discussions. Valuable papers were contributed by M. Pearce, on the subject of seeds, trees and plants, and on raspberry growing; by C. L. Smith, on shade and ornamental trees, also one on sex in strawberries of hermaphrodite vs. pistillate varieties; by Wm. Lyons, on strawberry growing; by J. T. Grimes, on currants. The membership was forty-six. A fair was held at Market Hall, Minneapolis, September 20, 1884. There were twenty exhibitors, making sixty-eight entries, including over one hundred varieties of apples, twenty-five varieties of grapes, plums, canned berries, etc. One hundred and thirty-nine dollars was paid in premiums. The exhibit was very fine, being a surprise to the visitors; it awakened an interest in fruit growing that we hope to keep alive. Eighteen meetings were held during the year. On December 27th the annual election was held and the following officers elected for the ensuing year:

President — M. Pearce.

Vice President — Ezra Ames.

Secretary — J. E. Northrup.

Treasurer — Prof. L. Asire.

Executive Committee — J. T. Grimes, Wm. Lyons, J. S. Gray, G. H. Roberts, H. F. Busse.

The weekly meetings were resumed the first Saturday in December, and are to be continued every week. The attendance is increasing, much interest is manifested and much practical knowledge gained. The meetings are now held at the seed store of Northrup, Braslan & Co., 22 Bridge Square, these gentlemen furnishing a room warmed and lighted, free of expense to the society. They also keep on file the leading horticultural and agricultural papers of the country for the use of the society.

M. PEARCE,
President.

J. E. NORTHRUP,
Secretary.

[For a more extended report, see Appendix. — SECY.]

The committee appointed to consider the matter of the appointment of an entomologist, etc., presented the following report, which was on motion adopted:

REPORT OF COMMITTEE ON ENTOMOLOGIST.

WHEREAS, The retiring address of President Smith called the attention of the Horticultural Society to the need of an investigation of the insects that are injurious to fruit and fruit trees; and

WHEREAS, The Horticultural Society of Hennepin County has recently recorded its opinion that some authorized investigation of the entomology of the State ought to be undertaken; and

WHEREAS, The Horticultural Society is deeply interested in all that appertains to the protection and propagation of fruit in the State of Minnesota, and is desirous of ascertaining all the facts that have a bearing upon this industry, whether adverse or favorable, and the ways and means of counteracting those adverse, and adopting those that are favorable; and

WHEREAS, It appears from the report of awards lately made at New Orleans that the State of Minnesota, though young in comparison to others in the raising of fruit, has nothing to fear when brought into comparison and competition with the most favored and most famous states of the Union, in respect to the quality of her fruit; therefore,

Resolved, That it is the sense of this society that there should be appointed and maintained, a State entomologist, a resident of the State, who should be authorized and instructed to disseminate useful information to the fruit growers and farmers of the State, respecting the insects injurious to vegetation;

Resolved, That the legislature now in session be requested to make the necessary provision by the enactment of the necessary law to carry out this plan, and by the appropriation of the sum of one thousand dollars per annum for that purpose;

Resolved, That it is the sense of this society that the information desired should emanate from the State University, and that such published information should be as rapidly and cheaply supplied as is possible, with correctness and thoroughness.

Mr. Harris suggested that a copy of the resolutions be placed before the governor or the members of the legislature in order that their attention might be directed to the matter.

Mr. Chas. Hoag. If Prof. Winchell, or some fair-minded man

would be appointed for such a place as that of entomologist it would be one of the noblest things the society could do to recommend him.

Mr. Harris said he would be in favor of the society recommending Prof. Winchell for that position and moved as the sense of the society that Prof. Winchell be authorized to employ an assistant and that he be instructed to prepare a report for our published proceedings. We would give him all the glory he was capable of earning.

Mr. Grimes said he thought the move on the part of Mr. Harris a good one, towards the appointment or election of Prof. Winchell as State entomologist, and thought it would be well as a society to elect him to that position.

Prof. Winchell being present said: Mr. Chairman, if you will permit I will offer a suggestion. I appreciate the courtesy and the honor which has been shown me, but I want to say that while I am acting as the State geologist I do not claim to be an entomologist, and I should, of course, have to decline from assuming to discharge the active duties required of an entomologist; but yet, if in any way the work with which I am connected and the law under which I am working, will allow of it, any assistance that I can render to this society and thus promote the industry of fruit raising in the State, by acting as State entomologist, or in any way, in seeing to the publication of the results which may be secured, I shall be glad to do. But I think that as the resolution now stands before the society it is perhaps a little uncalled for and a little unnecessary, and that perhaps it would be better simply to recommend the appointment of a State entomologist and let it take such course before the Legislature as they may see fit. Let them appoint some other person, or refer them to the Board of Regents to elect a State entomologist; but as such officer I should feel incompetent to serve.

The resolution was adopted.

Prof. Porter. The wording of that resolution will perhaps meet all the wants of the society, at the same time it meets the objections of Prof. Winchell to his personal acceptance. As I understand the wording it does not require Prof. Winchell to perform the work himself, but that he will supervise and it is optional with him to appoint the man that would look after that matter.

Mr. Grimes. We give Prof. Winchell the honor; if he is not capable of carrying the mantle he can drop it onto the shoulders of Prof. Porter.

Prof. Porter. I think he would have no trouble, especially if he is backed up by that State appropriation of one thousand dollars. We can ask this action to be taken.

As I understand it this is a joint meeting of the Horticultural Society and the Amber Cane Association, and I would ask if it would not be proper for a certain number of copies of the proceedings of the meeting to be furnished to the members of the Amber Cane Association, for distribution among the members? I would move that fifty copies of the transactions be furnished to the officers of that organization, to be distributed among their members.

The motion was adopted.

Mr. Harris was then called upon to read a paper upon market gardening and proceeded to read the same. The following is the paper :

MARKET GARDENING.

BY JOHN S. HARRIS.

Farming in some of its forms is the leading and essential occupation of at least one-half of the laboring and producing population of the "Great Northwest," and is the basis of the wealth, power and prosperity of the American people. Whatever lessens its dignity in the minds of the people tends to demoralize the nation, and whatever adds to its dignity makes so much more rapid and certain our advance in national wealth and greatness. It was the original and divinely appointed calling of man which places the farmer before kings and lords, merchants and artisans, soldiers and sailors, and he still feeds them all. We read in Holy Writ that "God planted a garden in Eden," and made it the first man's duty to dress and keep it. When driven from Eden it was still his duty to till the soil and eat his bread in the sweat of his brow. From that time down through every generation to the present, agriculture has been the basis of all progress, and to day the hope of our race hangs upon its prosperity. It is the lever that moves the world.

We often hear it remarked that any man having sufficient muscle is good enough for a farmer, but those who make the remark speak disrespectfully of earth's noblemen and slander their own mother, for the writer, the poet, the craftsman, the miner, the doctor, and the preacher all are creatures of agriculture, and the farmer must feed them all. To do this successfully requires

that the farmer should be a man with brains, and know how to use them. At the beginning God placed the farmer first of all in his creation and if he does not continue to hold that position the great structure of civil society must crumble and fall. To hold the position it is imperative that he shall be thoroughly educated in all the refinements of civilized life and qualified to fill any position in government, art, science or literature, in addition to a thorough knowledge of his calling; and if I mistake not the signs of the times, the time is now at hand when the farmer shall be recognized as the most thoroughly educated of all men.

Market gardening, or as sometimes termed, truck farming, ranks in importance not one step behind any other branch of farming. It is a system of husbandry that will cause the earth to afford more human food from a given quantity of soil than any other, and may be followed by men of limited means who could not successfully engage in stock breeding, dairying or grain raising. Still it affords ample scope for the use of capital. It is the best adapted to the neighborhood of cities and large towns where it in a measure supplies the place of private gardens of individuals who have not land, or are so closely engaged in other pursuits that they cannot well produce their own garden supplies. The locality for the market garden is the better the nearer it is to the city limits; providing the soil is adapted for the purpose, even though the commercial value of the land should be very great. The locality, if not near a city, should at least be near a railroad station, or some other means of quick transportation.

We often hear men who are looking about for some easy and expeditious way of making a fortune, or at least a good living, asking if market gardening is not an easy and lucrative business. We can only reply by quoting the proverb: "The hand of the diligent maketh rich." For the poor man no easy way to success has yet been discovered. The rewards come in, if they come at all, after long days and sometimes years of patient and well-directed toil. The man who may be expected to succeed in it without the backing of capital must be intelligent, persevering, and willing to work, for the business, though pleasant and lighter than ordinary farming, is laborious. By intelligent I do not mean that a man must be thoroughly read in letters and science, although that would be no disadvantage to him; but that he should be quick to comprehend and apt in making application, and he should be

capable of conducting his business in a systematic manner. He should be a close observer, and enterprising enough to keep out of old ruts and avail himself of the advantages of all improvements in methods, implements, seeds, and plants, that come to his knowledge. He should be shrewd in business transactions, but not mean or dishonest, that he may be able to hold the best customers and secure the best prices in the markets for his products. While it is not absolutely essential that he should have served an apprenticeship of several years at the business, he should be capable of directing his help in all of the operations, and have so much of the positive in his management that every employe will expect a prompt discharge whenever he shows a disposition to shirk duty. Such a man, even with but little money capital at his command, will be very likely to succeed, even if not very well acquainted with the business, for he would quickly acquire the requisite knowledge, and if he had capital it would enable him to secure the most desirable location and provide himself with the best seeds and implements. A poor man, or one with limited capital, may, under certain circumstances, succeed at market gardening, if he does not at first attempt too much and get swamped. Every man who contemplates engaging in the business should first weigh well all the circumstances that have a bearing upon it, and if he finds that he can cope with them, he may as safely engage in that as any other occupation. Some of the most essential requisites for success are soil adapted for the purpose, a good and convenient market, and capital enough to provide teams, implements, seeds, etc. The most profitable gardening is a combination of fruits and vegetables. The most profitable productions of the vegetable garden are usually perishable and bulky; therefore the market should be so convenient that it may be reached early in the day, while the fruits and vegetables are fresh and while the consumers are out in search of them. Vegetables coming to the market after the consumers have secured their day's supply, must generally be sold to dealers to hold over for the next day, or to be shipped to distant markets, and as they will calculate upon a large profit and allow for deterioration in value as they grow stale, the producer will realize but little from his sales unless there should be great scarcity in the market. The earliest vegetables of the season usually meet with the most ready sale and bring the highest prices; therefore it is desirable to have the garden in a location where the soil and aspect are favorable for bringing the vegetables

forward most rapidly to the earliest maturity. For a general gardening business a variety of soil is desirable; if but one variety can be secured a deep, dark, sandy loam overlying a subsoil of a porous nature, that soon becomes dry enough to work after heavy rains, is the best. A light land, with sand and gravel subsoil, is not favorable for raising late crops of cabbage, cauliflower and celery, but will do very well for the earliest crops of lettuce, radishes, cucumbers, melons, etc., etc.; and a stiff clay loam with a hard-pan subsoil is exactly the reverse.

The garden site is best, if nearly level, with a slope to the south or east, just sufficient to secure good surface drainage, as such a slope gets the benefit of the most direct rays of the sun in early spring. The garden site ought to be protected from cold winds by hedge, wall, or tight board fence upon the north and west sides. Belts of evergreens, groves of timber, or high walls upon the north side afford good protection. If possible to do so we should avoid selecting soil that is naturally poor, or that has been worn out by excessive cropping, for the reason that soils that have been exhausted of their fertility will at the start require a great outlay for manures and cultivation to restore the fertility. Those naturally poor, although they may be greatly improved by manuring, cannot be relied upon to produce the best quality of crops. But it might be better to locate upon such soils than at too great a distance from the market, for the reasons that it will afford better facilities for selling products, procuring manures and extra help when needed, as well as consuming less time in going to and from the market. For successful gardening the application of fertilizers to the soil is of the utmost importance. For most garden crops the ground will require liberal and frequent manuring; in fact too much manure can hardly be applied for such crops as asparagus, cabbage, cauliflower and celery. Stable or barnyard manure, well decomposed, is the best for general purposes. It is the bank stock which will supply nearly all of the ingredients from which growing vegetables draw their sustenance. The gardener who has a huge pile of it always at hand has deposits in a bank that never fails or suspends payments. Lime, ashes, salt, and every waste from the house or garden have great value as fertilizers, and nothing should be wasted. I never yet have seen a soil so rich that it would not bring a better crop by the judicious use of manure; the kind and quality to be governed by the variety of vegetable to be raised; but an occasional rotation with Peruvian

guano, bone meal, or other commercial fertilizers, has been found beneficial, as also the plowing under of green crops of rye or clover.

Every garden should contain a manure yard or compost heap in or convenient to it, where every kind of waste, with the cleanings of the stable and pig sty, may be composted. To start a compost heap a few loads of horse manure are hauled to some place where there is a depression on the surface, and after fermentation commences the pile is ready to receive additions of every kind of waste that can be secured. There ought to be a substantial fence around it, so that cattle and hogs can be kept in it at times; and the pile should be level on the top, so that water from rains shall not run off; and it is better for tramping and turning occasionally, unless a few hogs are allowed occasionally to root it over. Should the material be coarse it may require wetting down in time of dry weather. The waste hops from breweries and slaughter-house offal are valuable additions to the manure heap. Wherever it can be done the garden should be deeply plowed in the fall after first receiving a liberal dressing of manure, and especially if the soil is somewhat clayey, leaving the surface as uneven as the plow will make it. For the earliest crops some of our best gardeners do not plow again in the spring, but as soon as dry enough and frost is out, scatter fine rotted manure over the surface and harrow down fine and level. For the later crops the ground will be better for plowing again in the spring after the first crop of weeds has started, and I do not think there is any loss in plowing it for the earliest, as it leaves it in a condition to dry out and warm up faster. As a market garden is expected to endure for many years, it is important that the first preparation of the soil should be very thorough. In this country it is cheapest and best done with a team and plow; but in Europe, where labor is cheap it is largely done with a spade, trenching and manuring the whole ground to a depth of two feet. It is a slow and laborious process, and will not likely be soon adopted by Americans. Deep subsoiling is always beneficial, and whenever the subsoil is anyways wet and tenacious, tile draining will enable the ground to be worked earlier in the spring, and insure more certain and better crops.

The gardener should always provide himself with the best implements that can be procured even though the first cost be greater, and have a place to keep them and always see that they are in their place and in the best of repair when not in use. It

is a ruinous policy to allow tools to be dropped and left where last used to rust and rot until wanted again. The indispensable garden tools are a two horse steel plow, a harrow, cultivator, horse or hand wheel hoe, seed drill, Ames' spade and shovel, flat tined spade, fork, manure fork, steel rake, draw and shovel hoes, pronged hoe, wheel harrow, reel and line, watering pot, and market wagon, the first cost of which would not exceed \$300. Another important item is that of seeds. It is not practical for every gardener to raise his own seeds on account of the liability of many varieties to intermix when grown near together on small farms. Of many varieties those grown far north and west will be found superior to all others for earliness of maturity; especially is this the case with lima beans, sweet corn, and tomatoes. My advice would be to raise only such seeds as we have the facilities for growing in the greatest perfection, and purchase the rest of some reliable seed house, patronizing one at home in preference to one no more reliable away from home. Never purchase any seed simply because it is cheaper than others sell the same variety; good seeds bear about the same price everywhere. In raising seed select the best and truest type of the variety to prevent deterioration. Crossing or mixing takes place through the agency of the winds and insects, conveying the pollen when in bloom from one flower to another. It seldom does any injury to the current crop of cucumbers, melons, squashes and such other crops as the seed is produced within the part that is valuable as a food, but the next crop grown from such seed will be worthless. Corn is affected the same year in which it is crossed and the seeds of cabbage, turnips, and many other plants are nearly worthless when so grown.

To grow vegetables to perfection requires the constant attention of the gardener in keeping the weeds out and the surface of the soil mellow and loose. As the earliest vegetables always command the best prices and meet with the readiest sale it is policy for the market gardener to use every device within his knowledge to hasten the season and be the first in market; especially is this the case with early lettuce, radishes, cucumbers, cabbage, cauliflower and tomatoes. The man who has cucumbers and tomatoes before his neighbor, will often realize more from the sale of a dozen than after a few days from a bushel or hundred.

To secure this end in a climate like ours, glass structures are very essential, and the man who has not the ability to manage

hot beds, cold frames and forcing pits, or the capital to enable him to have them, is placed at a great disadvantage, and if there is much competition in the business, had better engage in some other calling, or locate in some place where there will be no competition, or his market gardening will not be a paying business. In the vicinity of large cities and good markets, it often pays the gardener better to make a specialty of some particular varieties for which his soil and skill are best adapted, and by growing them in the best manner and placing them on sale in the best possible condition, his products will gain a reputation and be eagerly sought for. The gardener whose soil is rather sandy may safely make a specialty of melons, cucumbers and radishes, while if he attempts to grow celery, cauliflower or late cabbage, he may make a failure of them or at best only a partial success and he will very likely lose money in the operation. Finally, it is of great advantage to all gardeners to study well the literature that pertains to their calling, and associate themselves together and frequently discuss the various matters and methods pertaining to their business. There can be no better association for the purpose than a well organized and conducted horticultural society. Such a society affords the gardeners an opportunity for meeting together and comparing notes, and receiving and imparting information in regard to the best varieties of fruits and vegetables, methods of propagation and cultivation, getting them into market; association lightens the hours of toil and improves their social condition.

I have written this paper from the standpoint of a lifelong experience, and am somewhat familiar with every branch of horticulture. If I have done anyone any good, I am thankful. If you desire to hear any more upon the subject at some future time, I am yours to command.

ANNUAL ELECTION OF OFFICERS.

President Smith announced that the next business in order was the election of officers for the ensuing year.

The following list of officers were then elected:

President—Truman M. Smith, St. Paul.

Vice Presidents—Messrs. A. W. Sias, Rochester; F. G. Gould, Excelsior; M. Cutler, Excelsior; G. W. Fuller, Litchfield; and E. H. S. Dartt, Owatonna.

Secretary—S. D. Hillman, Minneapolis.

Treasurer—J. T. Grimes, Minneapolis.

Executive Committee—J. S. Harris, chairman, La Crescent; J. M. Underwood, Lake City; Wyman Elliot, Minneapolis; Ditus Day, Farmington; M. Pearce, Minneapolis.

Librarian—E. A. Cuzner, Minneapolis.

Mr. J. M. Underwood was elected as delegate to the American Pomological Society, which meets in September, 1885, and Mr. J. S. Harris as alternate.

On motion of Mr. Underwood the executive committee were authorized to select any other delegates to fill vacancies and appoint all committees necessary for the ensuing year.

Mr. Harris moved to take up the revision of the fruit lists in the morning, which was adopted.

The meeting then adjourned till evening.

EVENING SESSION.

THURSDAY, JANUARY 22, 1885.

The meeting was called to order at 7 o'clock P. M. by President Smith.

The following communication was received, which was, on motion, ordered embodied in the report of proceedings.

REPORT OF E. B. JORDAN.

ROCHESTER, MINN., Jan. 20, 1885.

Mr. Truman M. Smith, St. Paul, Minn.:

DEAR SIR: Your card received. We marketed about 5,000 quarts strawberries, 25,000 quarts raspberries and about 1,500 bushels of apples. I can not give the amount of grapes as we didn't keep a book account. Respectfully yours,

MRS. E. B. JORDAN.

Mr. Tuttle. Mr. President, I understand that Mr. Jordan is engaged in orange growing in Florida. I was in Chicago a short time ago and I met a gentleman who stated to me that this orange business was being overdone. He spoke of Mr. Jordan, and said he would not be surprised to find that his orchard at Rochester, Minnesota, was much more profitable than his oranges in Florida. Oranges very little more than pay the freight to Chicago; they are sold very cheap and are very plentiful in the markets.

Mr. Harris. I wish to submit a short appendix to the report I made yesterday. I marketed about six tons of grapes from my vineyard last season. I expect to have three acres in bearing next year, and intend to keep on increasing the area until I have five acres planted.

President Smith. Mr. Norquist, of Red Wing, marketed over three tons.

Mr. Harris. I might say here that the grape crop of Minnesota was about 300,000 pounds; and I think over half that quantity was raised in Houston County.

On motion of Mr. Harris, the librarian was directed to furnish one hundred copies of reports for 1884 to the secretary of the State Agricultural Society.

Mr. Whipple stated that he would like to mention what a new member had accomplished in grape raising the past year—Mr. J. J. Cale. He has six acres set in grapes, from which he raised 1,200 pounds of grapes.

The report of the committee on constitution and by-laws being called for, Mr. Underwood presented the report, which was read.

Mr. Underwood stated that the committee had looked up the old constitutions and such by-laws as they could find, and out of the whole had brought together such as was valuable and made such additions as seemed desirable.

The report was received, and, on motion, the proposed articles taken up and adopted *seriatim*.

Mr. Dartt stated that he desired to make some objections to the constitution as a whole. I have the Iowa plan in my head, and expect it will stay with me. I don't want it to crop out often enough to annoy you, but still I believe it is right; hence, on every suitable occasion I feel like defending it. I raise the objection to the whole thing because it is not "Iowa." I will read the Iowa constitution first if you do not object. (Mr. Dartt then read the constitution of Iowa, and continuing, said:) Now, the

point of excellence of this constitution is that, by districting the State, dividing it into fruit districts, and electing a director for each district, which corresponds to a representative in the legislature, we are enabled to spread ourselves over the whole State; there is no section that is not represented. As it is with us here, I think not half the counties of our State are represented. There is a large district in the southwest part of the State that we have hardly ever heard from. Their location is about as favorable as Southern Minnesota generally, and they must be engaged in fruit growing. By this system of electing a director for each district, and paying the expenses of that director as they do in Iowa, we will secure a representative from every one of these districts. We can adopt this plan and take in the whole State, and then I think we may reasonably go before the legislature and ask for what we want and get it. On the other hand, if we ask members of the legislature from the southwest to aid us by an appropriation, they look around and think of their constituents, and ask what do they know about it, or what benefit do they receive? They may get hold of your report and find a recommendation of such varieties of fruits as will grow in the Mississippi Valley. They don't know whether they will grow or not, and very few of the people know of the advantages of the system, which they would know if we had this plan. That is the reason I want this directory system. I want to be able to extend our advantages to the whole State. I think there is no better plan. You may appoint your fruit committees away out there, and fix your experimental stations, and it won't bring them in as this plan will. I don't know as I ought to consume any more of your time.

President Smith. Iowa is so situated that nearly every part of the State is well adapted to fruit.

Mr. Dartt. We probably might not be able to get a report at once from north of Lake Superior. We could take in, perhaps, ten counties. Make the territory along the Mississippi, where your fruit capabilities are about equal, into a district; then put the inland counties as much as possible into fruit districts, so that their climate would be about the same; make about seven districts in the State. These seven directors of those districts, with the president, secretary and treasurer, would constitute the executive board. It gives every part of the State a representation in the system. Under a system where the St. Paul men want to vote, and are allowed to come in and pay a dollar and

become voters, what chance do these outside counties stand with the society composed in that way? If the legislature was governed in that way it would be an easy matter for St. Paul to take possession of the executive chambers whenever they saw fit, and it is about the same with this society. Our society is made up almost entirely of members from Minneapolis and St. Paul; there are a few stragglers from the outside county districts, who stand no show. I would not care for that—I think you are pretty good men down here, I like you for your liberality and on other matters—but I don't think that you can do the good that you could the other way. I want you to spread out over the whole State; we are not working for Minneapolis and the Mississippi Valley, but for the whole State. I move to substitute the Iowa constitution, with a provision for seven directors instead of twelve.

Mr. Underwood. Mr. President, I recognize the importance of our receiving some benefit from friend Dartt's two trips to Iowa; but supposed we had already received our pay, and that it would not be necessary to adopt their constitution in order to get our money back. I think I can show you that we have practically every provision he is asking for, and if I do perhaps something that emanates from our society would be just as valuable as anything that emanates from Iowa. It will be found that only a small part of our membership comes from St. Paul and Minneapolis.

President Smith. About forty members from Minneapolis and St. Paul, out of the 160 to 180 members in the State.

Mr. Dartt. I refer to attending members.

Mr. Underwood. This provision in reference to a board it seems to me is provided for. We have a vice president from each Congressional district; in addition to that a fruit committee from each district, which makes fifteen men in all that are expected to report. Then you have the superintendents of the experimental stations, scattered all over the State, and committees on small fruits and others, scattered over the State. It seems to me that is representation enough; and it seems to me the only thing is to provide for their expenses while here. We can provide for paying the expenses of the vice presidents, the committees on fruits, etc., and then I can see no particular object in the provisions of the Iowa constitution over ours. Our executive committee needs to be so constituted that they can come together without great expense and without too great delay, and

transact necessary business. We have sought in every way to curtail expenses rather than to increase them. Therefore I hope the motion will not be adopted.

Mr. Dartt. I think if we had the directory plan there would be no necessity for a meeting of the executive board during the year. If they have to meet it may be well for them to have it at or near the capital; but it don't suit the mass of the people so well as it does to let them have a finger in the pie. I believe with this other plan you would go before the legislature with a great deal fairer prospect of success than under the presentsystem.

The motion of Mr. Dartt was lost.

Mr. Harris said he had always been in favor of a State board of horticulture.

Mr. Dartt. I am not at all surprised. Men have to allow their moral courage to work up awhile, so they can work in the interest of the whole and throw their own interests aside a little; I expect by another year you men of Minneapolis and St Paul will perhaps get ready to do the outside world justice. If you are I shall be happy. (Laughter.)

Pending the adoption of article eight of the constitution some discussion arose.

Mr. Dartt. In our "Iowa plan" the secretary must hold his office until he shall be able to make his report; I think that is the proper plan.

Mr. Underwood. That was as proposed last winter. It is in article five, where it was provided that he shall compile the annual report of the society. But we looked that over and thought we saw objections to that.

Mr. Dartt. I would give him sixty days to get out his report.

Mr. Smith. I think he should go in for the year.

Mr. Dartt. I do not think we ought to give him any chance at all to get extra pay.

Mr. Underwood. Take it this year; Secretary Gibbs is down at New Orleans. Suppose we were working under this proposed by-law here, and we had to depend on him to get out the annual report; we could not do it. We must depend on Mr. Hillman, our newly elected secretary, to get out that report. This really cuts very little figure any way. He could just as well finish it up as Mr. Gibbs, probably. Mr. Elliot, Mr. Sias and myself have given the matter a good deal of thought.

Mr. Harris. I can see no objection to Mr. Dartt's proposition. Why not let him receive the books the first of April, and the

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retiring secretary can help us. We want it understood that the secretary's salary commences at the first of April.

Mr. Smith. There is some objection to that. Some think he ought to be continued. But suppose he don't care for the society any longer, and "haggles" out a report. I can see no objection to turning over the books at once, and then the new secretary goes on and gets out the report. Our reports will be got out after the election of the new secretary. I cannot see why a new secretary cannot get out a report as well as an old one. In getting up that report it familiarizes him with the business of the society to a great extent. He knows that is a part of his work. There is that reason for giving the new secretary the work.

Mr. Underwood. That is the reason the committee thought best to give the new secretary the work of getting out the report.

Mr. Smith. I think the new secretary should get out the report.

Mr. Sias. As one of the committee to revise this constitution I must say that I feel the force of Mr. Smith's remarks. When we vote out a secretary it is *prima facie* evidence we don't want him any longer, and don't want him to handle goods for us any longer.

Mr. Dartt. The reasons advanced for turning over the office, I think, are the very ones why he should be retained. The secretary has been running the business right along during the season; he is familiar with all the correspondence and everything that is to go to make up this report, and when everything is in his own mind and in his own hands he can make up a better report himself than a new man. This man, Mr. Hillman, will make a better report a year from now than he could if he had the report to make to-day. There are many things that will come into his possession in the transaction of the business that would help him to make it. That is one of the very best of reasons why he should retain the place long enough to comply with the requirements and make the report. I don't want the members to vote for the thing that is wrong, to beat Iowa.

Mr. Harris. I cannot see any objections, because we certainly should have our eyes open and elect a proper man for secretary.

The article as read was then adopted; also the other articles.

The proposed by-laws were then taken up and considered separately and adopted. *

* For constitution and by-laws as adopted, see page 15 *et seq.* — Sec'y.

Mr. Harris moved that for the present year, commencing with the close of the present meeting, the salary of the president of the society be twenty-five dollars; that of the secretary four hundred dollars; that of the treasurer twenty-five dollars, and of the librarian ten dollars.

The motion was adopted.

Mr. Dartt said he hoped the secretary would abridge the report as far as was consistent to do so.

Mr. Harris said the secretary should act in harmony, of course, with the other officers.

Mr. Hillman suggested that it was desirable to have a committee upon publication to assist in arranging the subject matter of publication in the forthcoming report of the society.

Mr. Dartt then moved that President Smith, Wyman Elliot and C. L. Smith be constituted a committee on publication and be requested to abridge the report so far as possible, without injury to the value of the same. The motion was adopted.

The meeting then adjourned till morning at 9 o'clock.

MORNING SESSION.

FOURTH DAY—FRIDAY, JANUARY 23, 1885.

The meeting was called to order by President Smith.

A resolution was adopted appointing the following persons a committee to district the State and report at the next annual meeting, to-wit:

Messrs. J. S. Harris, Wyman Elliot and E. H. S. Dartt.

LIBRARIAN'S REPORT.

The librarian then presented his report :

THE COLLEGE OF AGRICULTURE, }
UNIVERSITY OF MINNESOTA, Jan. 20, 1885. }

Mr. O. Gibbs, Jr., Lake City,

DEAR SIR: The following report is an account of the reports on hand at present: 1866-73, cloth 230; 1874, paper 437; 1875, paper 233; 1876, paper 1,050; 1877, paper 361 and 15 in cloth;

1878, paper 153 and in cloth 44; 1879, paper 9 and in cloth 11; 1880, cloth 118; 1881, paper 1,300 and in cloth 300; 1882, paper 1,760 and cloth 620; 1883, paper 154, cloth 1,105; 1884, paper 250, cloth 465.

Yours respectfully,

E. A. CUZNER.

Mr. Grimes moved that the librarian be requested to make a report upon the remaining copies, and publish a list of the volumes now in the library of the society.

Mr. Harris. We ought to know how many copies we will have left. We ought to keep fifty cloth volumes that will not be broken upon. We have only about twenty volumes, all told, of one year.

The motion was amended to accept the report of the librarian and request that it be supplemented with a list of all the books belonging to the society in the library, and adopted.

Mr. Sias presented a communication from A. J. Phillips in regard to prize essays, etc., which was read and elicited some discussion. Mr. Sias moved to refer the "prize essay" to a committee of three, aside from the essay of Mr. Speer. After some discussion the motion was tabled.

REVISION OF FRUIT LIST.

The next order of business was the revision of the fruit list.

Mr. Underwood stated that the committee had never had a meeting and had no report to make.

Mr. Dartt moved to take up the old list and revise it; also that in recommending varieties it be done by vote, and a record be made of the number of votes for and against each variety.

The president said the motion was not in order as it was a part of the standing rules to proceed in that way.

The list of apples, as adopted at the annual meeting in 1882, was then read. A number of changes were made, as will appear below:

APPLES.

For general planting the Duchess was recommended by a vote of nineteen for and none against. Wealthy, twenty-two for; one against.

For planting in limited quantities in Southeastern Minnesota, Tetofsky, fifteen for; two against.

In regard to retaining the Plumb Cider on the list Mr. Tuttle said he could see no reason for its being retained. He would prefer the Wealthy.

Mr. Harris said he had raised good crops, but would not plant them as it was not a reliable bearer.

Mr. Pearce said he would agree with Mr. Tuttle. The Wealthy don't bear every year. He had some trees of the Plumb Cider fifteen years old that bore well; and in favored localities the Plumb Cider was a very good apple. He was opposed to cutting down to one variety. He would recommend planting seventy-five of Wealthy to one of this.

Mr. Harris stated that he had lost more of the Wealthy than of anything else; but he was planting it quite largely, and would continue to do so.

The vote being taken on Plumb Cider, it was stricken from the list by a vote of six for, seven against.

Fameuse stricken from the list; seven for; eight against. St. Lawrence, five for; six against. Walbridge, one for; eight against.

Yellow Transparent was recommended for general trial; ten for; none against.

Mr. Dartt moved that the Peach apple be placed on the list for trial. In his section it seemed to be nearly as hardy as the Duchess. Tree grows well, but so far has been nearly destitute of fruit. If it won't bear it ought to be grubbed out.

Mr. Pearce inquired if they had not better amend the motion by adding "for Steele County."

Mr. Harris. It is a variety that is not well known. I have trees that were purchased from the Jewell nursery, which have always been hardy. They do not bear when young, but for two years past have borne heavily. I like the fruit better than that of the Duchess. The codling moth seems to delight in spoiling the fruit. Of about two barrels of fruit very few specimens were perfect. I believe the tree to be hardier than the Duchess, because when a tree does not bear early it is a good evidence that it is hardy.

Mr. Grimes. My observation, so far as the tree is concerned, is favorable. It stands well. Have trees large enough to bear half a bushel of apples, but have never had more than a few specimens of fruit from them. If they would bear well I would vote for them.

Mr. Underwood. We have been growing it for a good many

years, and for awhile have let it go by default. In the old nursery ground there were some trees left, and they have grown into trees and seem to be perfectly hardy, and bear well every year; not so well as the Duchess or Wealthy, but amply repaying for the ground they occupy. Have gone to propagating them. I should think it would do for Steele County.

Mr. Dartt. If it will do for Steele County it will do for the world.

It was recommended for trial by a vote of eleven for and none against.

On motion of Mr. Sias, Red Anis was recommended for trial; eight for, none against.

Mr. Dartt. I am in favor of putting a goodly number of these Russian varieties on the list for trial. I would recommend the Smelling apple. I had a tree that bore half a bushel of large apples. The tree seems to be hardy and has borne two crops. It grew in Steele County.

Mr. Sias. I saw the fruit at the State fair, and it made a fine show. I will say that I fruited the Smelling apple about ten years ago at my place. I consider it very hardy, a fine, showy apple, and am in favor of putting it on the list for trial.

There were eleven votes for, none against.

Mr. Dartt moved to place the Lieby on the list for trial. He said it was a very hardy tree, more robust in appearance than the Smelling apple; bears nice fruit, not quite so large as the other, seems to be very hardy. He had a tree that had borne two crops.

Mr. Peterson. Here is a sample of the Lieby. I have a tree that is ten years old and it has borne three years. It is a late fall apple and the tree is hardy. It is most as hardy as the Hibernial; all of that family are Russians, and if they do not live, there is no use to plant any trees.

Mr. Sias. I agree with Mr. Peterson. I have fruited the Lieby several years; it bears every year and bears heavily, and is one of the hardiest we have; there is no doubt about that. For a fall apple it is a pretty fair keeper. It is not a very good eating apple, a little too much acid. I would like to hear from Mr. Tuttle; have never fruited it.

Mr. Grimes. I understand in recommending trees for the general public to plant, it is a question we should consider whether these trees can be procured or not for their use; if not we had better make that list pretty short.

President Smith. This is not for general planting.

Mr. Sias. They can get cions if they cannot get trees; I have no trees to sell.

Mr. Grimes. I want to see those valuable Russian varieties brought out as speedily as possible. But I do not want to have the society mislead the public by leading them to believe that the trees can be had when they cannot.

Mr. Underwood. Would you have the society wait until the nurserymen had millions of trees?

The Lieby was adopted for trial by a vote of eleven for, none against.

Mr. Latham moved to place the Swan apple on the list. He said that he had it growing beside the Lieby and the fruit is full as large. It is No. 370 of the Russians. The motion was adopted by a vote of eleven for, none against.

Mr. Pearce moved to recommend the Little Seedling. The motion was adopted, nine for, none against.

Mr. Tuttle. I want to say a word in regard to the Little Seedling; it is one of the best keepers we have found among the Russians. The tree seems to be perfectly hardy and is a great bearer. I find the Little Seedling, or Repka, seems to be a different apple in some hands from that of mine. I think it will be one of the apples that will be worthy of general cultivation.

Mr. Peterson. There is a different kind from Mr. Tuttle's and I don't know as anyone has the Little Seedling but myself. There were samples of it at the meeting last year. The apple that Mr. Tuttle has is a good eating apple, but the one I have is good for cooking and it keeps for a whole year. They are not the same kind that he recommends.

Mr. Smith moved to place the Longfield on the list. He thought it one of the best.

The motion was adopted; fourteen for, none against.

Mr. Sias. I wish to inquire of Mr. Tuttle if he has fruited the Orange Streaked?

Mr. Tuttle. That is a fall apple. There are so many of that class, or of that season, that I think it not best to recommend it. The Hiberna is a good cooking apple; I should select that in preference to almost anything else, for it will grow where anything else will.

The Hiberna was placed on the list for trial by a vote of thirteen for, none against.

SEEDLINGS.

On motion of Mr. Harris the Rollins Pippin was continued for trial, by a vote of eight for, none against.

Mr. Harris moved to place the Excelsior, raised by P. M. Gideon, on the list of seedlings, for trial.

Mr. Pearce. I understand that those varieties of Mr. Gideon's are not to be had as he does not propose to put them out.

Col. Stevens. I will venture to say that Mr. Gideon hasn't an apple on his grounds that he will not give, sell, or dispose of in some way. All the apples he has propagated that are so valuable he has scattered over the whole continent. He has forty or fifty varieties that are hardy; but he would not put them on the public unless satisfied they were perfectly hardy—he is not that kind of a man. It seems to me that not only the Excelsior, but the Gideon and a great many others which he has ought to be recommended.

Mr. Gideon stated that he had published an article in the *Stock, Farm and Home* upon seedlings, which he had desired to have read before the society.

Mr. Harris moved that the article referred to be embodied in the report of proceedings. The motion was adopted.

Mr. Pearce said he desired to ask whether these varieties could be obtained. He had wanted to get cions of Mr. Gideon but had been unable to do so. He would inquire, so there would be no misunderstanding, whether he was prepared to furnish cions or trees of the Excelsior apple.

Mr. Gideon. I will be prepared to furnish trees next fall, but there are no cions furnished this spring. I expect to set about ten thousand root grafts this spring, and of all collections about one hundred thousand.

The motion to place the Excelsior on the list was then withdrawn.

Col. Stevens thought the Elgin Beauty and the Giant Swaar were good varieties to recommend.

Mr. Harris. I think the Giant Swaar is the Northwestern Greening.

Mr. Sias. I don't think it is the same.

Mr. Dartt. It seems to me as many premiums as have been awarded on seedlings we ought to have more than one variety recommended for trial.

Col. Stevens moved to place the Elgin Beauty on the list. The motion was adopted by a vote of ten for, none against.

Mr. Harris moved to place the Giant Swaar on the list. Adopted; eleven for, none against.

Mr. Harris. I will move that proprietors of trees, or varieties, that take premiums on seedlings, be requested to furnish cions to the experimental stations; or that premiums be awarded with the understanding that cions are to be furnished.

Mr. Pearce. I have a seedling from which I have promised cions to some extent. It took a ten dollar premium at the Minneapolis fair. The apple is exceedingly hardy.

Prof. Porter. Permit me to make a brief statement concerning the Experimental Station at the State University. Next spring we shall be prepared for the reception and care of all cions and grafts that may be received. We have not been ready heretofore. I would be very thankful to members of the society if they would send in either cions or root grafts for this spring's use. Anything that they may see fit to send in, properly labeled, will receive proper care and attention, and will be mentioned in the annual report. I shall set every variety of grape that grows above ground in the United States which I can obtain. The first planting I did was two years ago. I have set twenty varieties, of which ten are of the leading varieties, and all are doing well.

Mr. Pearce inquired of the Kimball apple.

Mr. Sias said he had obtained it two or three years ago and it was doing well. He had found them growing on the farm of Mr. David Smith, and looking remarkably vigorous.

Mr. Pearce. There is a tree of this variety in Olmsted County, that is nineteen or twenty years old, which was planted by a lady. It was about ten years old when it came under my observation. The fruit was exhibited at Owatonna one year, and Mr. Seth Kenney and others who saw it on exhibition pronounced it equal to the Rhode Island Greening. I think the apple would be a great benefit to us and would move to place it on the list for trial.

The motion was adopted by a vote of twelve for, none against.

Mr. Tuttle. I should be very glad to furnish any cions or trees, or anything that I have for your experimental stations. I have attended this convention with a great deal of pleasure, and would say that among a body of horticulturists I always feel perfectly at home. I have certainly been made so here, and am

very much gratified at the spirit manifested in the convention. The work that you are doing is not a selfish one; it is for the benefit of the great Northwest. We hope to see, and we trust the time will come when these great prairies will be dotted over with orchards. I firmly believe we may, and with orchards that will grow valuable fruit. I don't believe there is a paradise on earth where there is no fruit. No matter what there may be in the soil, or in the natural surroundings, I believe there is no paradise on this earth, unless it is accompanied with fruit.

I thank you very much for the kindly attentions you have shown me and your reference to our society, and the work we have done in our State. We shall be glad to see any of your members at our convention, which meets two weeks from next Monday, at Madison.

President Smith. On behalf of the members of our society, I will tender the thanks of the society to Mr. Tuttle for the information we have received from him, and his very generous offer to furnish us with specimens for our experimental stations; and we shall be glad to have him meet with us whenever he can arrange to do so.

THE GROWING OF SEEDLING APPLES.

BY PETER M. GIDEON.

Perhaps a few items on the propagating of new varieties of seedling apples would be of interest to many not familiar with the facts or principles governing the production of new varieties from seed; therefore, please indulge me in a short essay on the subject, though in doing it I repeat many items often told, yet new and of interest to the great mass who desire a better collection of fruit, whether they intend to embark in the business or not.

I began the culture of fruit about sixty years ago by planting peach seed. Got a good stand and good growth the first year; then dug, reset and cultivated them myself, and had the pleasure of eating fruit from them before I was nine years old; and ever since it has been my chief calling and delight. But our efforts and trials in Minnesota began thirty years ago last spring by planting one bushel of apple seed, a peck of peach seed, and five hundred apple, pear, plum and cherry trees, and for eleven years thereafter planted each year enough apple seed to bring

1,000 trees, and in the time made frequent additions to the orchard of old named varieties—all Southern or Eastern grown trees and seeds, and all kept as long as they could be made to live in Minnesota, and to-day only two trees remain. One of those, the Wealthy, and grown from a cherry-crab seed, obtained of Albert Emerson, of Bangor, Maine, of whom I obtained cions at the same time, from which I grew the Duchess, Blue Pearmain, and the Cherry-crab, all of which, combined, were the foundation of Minnesota horticulture, that to-day is the pride and hope of the Northwest. But since those varieties came into bearing we have planted only of our own growing of seed, with forty first-class varieties the result. Not all large, but each first-class of its size, and none of the forty less in size than Transcendant or Hyslop, and every one better in quality than those, whilst several will equal, if not surpass, every known popular variety, whether to eat from hand or for culinary purposes.

And now, having given the results thus far of those that have come into bearing, I will state the process by which those results were obtained. The process was, and is yet, the crossing of the common apple with those varieties that had enough Siberian crab in the composition of the tree to make of it what we term an iron-clad, and the process is, by close planting, that wind, bees and other insects can the more readily and surely carry the pollen from bloom to bloom—from one variety to another—so as to fertilize the germ of the fruit, and the seed so fertilized we plant, and when the young trees are large enough to set in orchards, we select the best and then wait to see what the fruit will be; but it is not every seed that will produce a good apple, for no two seeds will be fertilized just alike, hence no two apples just alike, even from seed of the same apple.

From the same lot of seed we grow apples from the size of a large green pea up to the largest size, and of every imaginable form, color and quality, and diverge as widely in form and habit of trees as in fruit; and thus far, of those selected and set in orchards, about one in each fifty has given a first-class apple, and for the reason that our seedlings are a mass of mongrels—mongrel crossed in the mongrel—each, perhaps, of a thousand grades; hence the uncertainty as to what we get. Yet we have demonstrated that out of a great mass we are sure to get something good. The hardness of the crab has to be retained in the tree and size without the astringency of the crab flavor in the fruit, and to judge with any degree of accuracy as to what class

of tree is most likely to combine the sought for good qualities, requires no small amount of careful observation, through a long series of experimenting, and then miss far oftener than hit. When we grew the first from our own growing of seed, we set all in the orchard, and later set in orchard about one-sixth, and yearly, as new seedlings come into bearing, we develop in knowledge, and as we gain knowledge the per cent set in orchards grows less. Thus far it has taken from three to five hundred seedlings to give us one first-class apple, and that from seed taken from the best apples we had; but in the same orchard grew a vast amount of inferior apples, that to a greater or less extent adulterated, hence to some extent the smallness of the gain.

But the conditions in the State orchard are quite different. There nothing but the very best is set, and from it we anticipate a larger percentage of good fruit, though mongrels will cut mighty freaks sometimes in reproduction, and as yet the oldest trees from the State orchard seed are only two years; yet young as they are, many bid fair to give good fruit, and in fact our faith strengthens each year as new varieties come into bearing. But whether I have adopted the best known mode by which to develop new varieties of good quality adapted to our climate, is to note the results, and the result is more first-class apples in the last fifteen years than all other modes put together.

The Siberian cross has given us hardiness of tree, and a combination of qualities not found in any other class of apples, whether to eat from hand or made into sauce—for either use we can match the world, and therefore I hold the Siberian crab to be a godsend to the entire North.

The object of the State orchard is to grow new varieties from seed adapted to our climate, and especially long keepers, and to that end we planted close together in rows, and every alternate tree is a long-keeping variety, and the other alternates are our best iron-clad seedlings—the one to give hardiness and the other long keeping, and in the cross expect to get some combining hardiness of tree and long-keeping fruit of good quality, a treasure we have not yet got, and to get it we top-graft long keepers on hardy seedling stocks that get their growth early and stop their sap flow, thus compelling the later growing, more tender variety on top to harden up for winter, and thereby produce and give us the cross, which could not be done were the long keeper on its own tender, late-growing roots. And even on the best of stocks we find but few long keepers that can be made to stand

and give fruit, and none that are hardy enough to make a permanent tree, and only about twenty out of one hundred bid fair to some day yield fruit—as yet only a few samples have been had from any long keeper. The cross is made in the bloom, the pollen of the iron-clad being infused into the bloom of the long keeper, and the seeds from the long keeper, thus impregnated, are planted, and the young trees that prove hardy and of fair appearance are selected for fruiting.

We have, by careful and repeated plantings, demonstrated to a fact that the seedling will ripen its fruit at or near the time the parent apple did from which the seeds were taken, no matter what crossed with, nor how closely it partakes of the male parent in tree and quality of fruit. In our many trials we have solved the problem what to do and how to do it, and now, with the State orchard set to our notion, we are fairly started on the road to sure success—to make of Minnesota a great fruit-growing State.

The State orchard was set six years ago last spring, with root and crown grafts—no material difference in their growth—and to each was set a stake to mark its location, and at this date have had three crops of apples from it, and the seed of all planted, the last crop being about seventy bushels of the very finest apples. So, taking the success of the past as a criterion for the future, we may reasonably expect not far in the future to number our first-class varieties by hundreds, and in succession the year round. And in conclusion I will just add that many seedlings on our own grounds bore this year (1884) for the first time, and as seedlings do not always prove true to their first crop, we neither name nor send out until after the second fruiting; therefore but few varieties can be had before next fall, at which time we hope to have a full supply of trees of all the best varieties.

Excelsior, Minn., Dec. 20, 1884.

PREMIUMS AWARDED.

Mr. Elliot, from the committee on premiums, reported the following list of premiums awarded by the society at the present meeting:

The committee on the award of premiums on apples, new seedling apples, and grapes, report the following, in their judgment, after a careful inspection and examination of all the fruits on exhibition, as being worthy of consideration:

APPLES.

	PREMIUM.	AM'T.
Collection, A. W. Sias, for A. J. Phillips.....	First	\$ 4 00
Collection, A. W. Sias, for A. J. Phillips. Best in condition.	Second	2 00
Display Wealthy, A. Peterson, Waconia.....	First	4 00
Display Wealthy, M. Pearce, Minneapolis.....	Second	3 00
Display Wealthy, Anna B. Underwood, Lake City.....	Third	3 00
Plate Wealthy, A. W. Latham, Excelsior.....	First	2 00
Plate Wealthy, Andrew Peterson, Waconia.....	Second	1 00
Plate Walbridge, A. J. Phillips.....	First	2 00
Plate Talman Sweet, A. J. Phillips.....	First	2 00
Plate Pewaukee, A. J. Phillips.....	First	2 00
Plate Scott's Winter, Anna B. Underwood.....	First	2 00

RUSSIAN VARIETIES.

Collection, A. Peterson.....	First	5 00
Plate Lieby, No. 240, A. Peterson.....	First	2 00
Plate Hibernial, No. 378, A. Peterson	First	2 00
Plate Ostrekoff's Glass, No. 472, A. Peterson	First	2 00

WINTER SEEDLINGS.

Plate Seedling No. 1, G. S. Woolsey, Minneapolis.....	First	2 00
Plate Seedling, F. K. Phoenix, Delavan, Wis.....	Second	1 00

NOTE—Woolsey Seedlings, Nos. 1 and 2, produced in five years from seed of the Wealthy, is a fact worthy of notice from your committee; and if a history of the hardiness of the trees, with soil, location, exposure, habit of growth, and whether transplanted, would be furnished for publication it would be of benefit to the members of the society. No. 1, the smaller of the two varieties, in our judgment, will prove the best and largest keeping variety; a good culinary apple. No. 2, the largest, is a fall apple, inferior to its parent, with nothing to recommend it but size and possibly hardiness of tree.

The exhibition of Peter M. Gideon, of beautifully arranged plate pictures of his new seedlings, is worthy of a passing notice, and if the fruit, as far as possible, could have been placed on exhibition, it would have added much interest to his exhibit, and it is hoped he may be able in future to do so, giving us a chance to judge of their merits, than on paper. We voice the desire of all present that Mr. Gideon furnish a short description, as to hardiness, season, quality, etc., for publication.

GRAPES.

The largest number of varieties placed on exhibition, by Truman M. Smith, of St. Paul, consisting of fourteen named varieties. We especially commend them to your notice for their splendid condition so late in the season. A list of them, named in the order of their keeping qualities, with the method of handling and keeping, should be furnished our secretary for publication. Eumelan shows good keeping qualities, and if placed in cold storage will be a fine flavored variety for winter use:

	PREMIUM.	AM'T.
Ionia, T. M. Smith, St. Paul.....	First	\$5 00
Collection and Condition, T. M. Smith.....	First	2 00
Eumelan, J. A. Kernan, Young America.....	First	2 00
Agawam (Rodgers No. 15), T. M. Smith.....	Second	2 00

SEEDLING GRAPES.

A new seedling grape from S. S. Washman, of Lake City, presents a good appearance, keeping quality good, bunch medium in size, skin thin, pulp melting and fine flavor. If a history of this new favorite could be furnished, stating its parentage, hardiness, productiveness, etc., we would be in favor of recommending a premium.

VEGETABLES.

	PREMIUM.	AM'T.
Hubbard Squash, H. F. Buse, Minneapolis.....	First	\$ 75
Early Potatoes, H. F. Buse, Minneapolis.....	First	2 00
Winter and Spring Potatoes, C. H. Whipple, Northome.....	First	2 00
Winter and Spring Potatoes, W. H. Brimhall, St. Paul.....	Second	1 00
Collection Onions, J. J. Cale, Minnetonka.....	First	1 00
Collection Onions, H. F. Busse, Minneapolis.....	Second	50
Collection Field and Garden Seeds, 80 varieties, E. Webster.	First	6 00
Same, Northrup, Braslan & Co, Minneapolis, 51 varieties...	Second	3 00

PANTRY STORES.

	PREMIUM.	AM'T.
Strawberry Jelly, Mrs. T. M. Smith, St. Paul.....	First	\$1 00
Currant Jelly, Mrs. T. M. Smith, St. Paul	First	1 00
Rhubarb Jelly, Mrs. T. M. Smith, St. Paul.....	First	1 00

On motion the meeting then adjourned until 2 o'clock P. M.

AFTERNOON SESSION.

FRIDAY, JANUARY 23, 1885.

The meeting was called to order at 2 o'clock P. M. by President Smith.

On motion of Mr. Pearce the premium list of last year was adopted.

On motion of Mr. Dartt the treasurer was authorized to borrow a sufficient amount of funds from the permanent fund to pay all current expenses of the year.

On motion the list of hybrids was then taken up for revision.

CRAB APPLES.

The list as adopted in the year 1882 was taken up. (See page 103.)

Mr. Dartt said he was not sure that Beach's Sweet was hardy. If anyone knew that they had borne well he would be willing to retain it.

Mr. Pearce. Beach's Sweet is apparently hardy and a good grower; as it gets older it is a heavy bearer and none could have any objections to the fruit.

Beach's Sweet was adopted; five for, and none against.

Orange adopted; six for, one against.

Early Strawberry adopted; five for, one against.

Whitney No 20, adopted; four for, none against.

Mr. Sias stated that he was the first to introduce Powers' Red. It came from Flushing, N. Y.; had proven perfectly hardy, a great bearer and a fine pie apple.

Powers' Red was stricken from the list, also Minnesota.

For planting in limited quantities Virginia and Hyslop. The latter adopted by a vote of ten.

Col. Stevens. I would like to say that the Hyslop, while I don't think the fruit is as good as the Transcendent, has become celebrated in our market, and is in demand, as valuable for making jelly. It makes jelly of a peculiar flavor and exceeding richness in color.

Hutchinson's Sweet was stricken from the list.

GRAPES.

Mr. Smith moved to recommend the Concord for general planting.

Mr. Latham. There is no objection to that, but there should be a modification. It is the latest we have on our list for general planting. I would amend by adding, in favored localities.

The motion was lost; five for, six against.

Mr. Smith's motion adopted by a vote of thirteen for, none against.

Delaware adopted; fifteen for, none against.

Moore's Early was substituted for Janesville by a vote of eight for, three against.

Mr. Chas. Ludluff. The Miles grape is very fine. The Hartford Prolific is very early. Moore's Early is a poor bearer on my place; bunches not large but the berries are very large. It is a good grape, but not a good bearer. I don't call it first quality; we have many a good deal better. The Delaware is the sweetest and the best; the Lady is very early, and I think it is the finest grape we have.

The Lady was stricken from the list for planting in limited quantities.

Mr. Gideon considered the Brighton as one of the best, and favored placing it on the general list.

Prof. Porter. The Brighton I regard as one of the very best of grapes we have grown, in vigor of vine, productiveness and quality. I have vines that are nearly two years old. I judge of its adaptation to our Minnesota climate by the growth made in the last two years, growing with nineteen other varieties; they have made the most vigorous growth of any. They ripen their vines early and come out in the spring in splendid condition. I would vote to place it on the general list.

Mr. Latham. I have observed it closely. I believe I give my vines as good care as anyone; the ground is not fertilized in any way so as to force them or induce any disease, to which vines are liable from that or from over-cultivation. I have the Brighton in two places in my vineyard, and in both places the fruit has mildewed and rotted more or less. It is a good bearer and produces handsome bunches; but as compared with Moore's Early, or even Lady, I could not vote to place upon the general list, from the fact of its blighting, rotting and mildewing. I have no trouble with any other varieties in that way except the Ionia. It ripens a little earlier than the Concord; it is safe around Lake Minnetonka.

Mr. Gideon. We have a good many vines of the Brighton; we never had them rot until this last season, when a good share of our crop was destroyed. But there was certainly nothing that came nearer escaping than the Brighton. The Ionia was cut into very heavily, and one other rotted badly. The Brighton was much better than the Concord with us and made as good, healthy growth as any on the premises. The Concord and Isabella were pretty near entirely killed out.

Mr. Ludluff. I must say the same as Mr. Gideon. The Brighton keeps sound on my place.

The Worden was adopted for general cultivation; eight for and none against.

For planting in limited quantities, Rodgers No. 15; nine for, none against.

President Smith. I would suggest that Rodgers No. 9 has proved to be the best of the whole of them.

Mr. Ludluff. Rodgers No. 44 is better.

Mr. Gideon moved to place Rodgers No. 9 on the list for general cultivation.

Adopted; ten for, none against.

President Smith. The grapes sent to St. Paul from the vineyard at Red Wing are about the finest that come to this market. The Lady and Moore's Early are excellent, but not as hardy and vigorous vines as I would like. Lady is a good fruit, sells well, but the vines are not as vigorous as they ought to be. They are fair bearers.

Mr. Ludluff. I recommend the Martha for an early grape; it has bunches like the Delaware. Think it would make a good market grape.

President Smith. There have been a good many of them shipped from below; but they don't sell well. I have had it in fruit some eight or ten years. We have others that I think are much finer. I would give more for one pound of Lady than for three of Martha, for my use or to sell.

Mr. Ludluff moved to place the Martha on the list for trial.

Adopted; ten for, none against.

President Smith. Rodgers No. 44 is a good variety. I have always had to trim them, but I have never lost a Rodgers grape in any way. I would not be without No. 44. I would state that by pruning the Rodgers back that I got more and better fruit. I can succeed well with it by pruning, and prefer it to the Concord. Trim on the Cleveland plan.

On motion of Mr. Gilpatrick, Rodgers No. 44 was placed on the list for trial. Eight for, one against.

Mr. Gideon. The Elvira is a very good grape to plant. The bunches are very compact; grapes a greenish white.

Mr. Ludluff moved to recommend Kramer's seedling for trial.

President Smith said it was an excellent grape, and was originated by Mr. Kramer, of La Crescent.

Motion adopted; six for, none against.

On motion of Col. Stevens it was decided to hold the next annual meeting at the Agricultural Hall, State University, Minneapolis.

Col. Stevens, from the committee on final resolutions, presented the following report, which was adopted by a rising vote:

FINAL RESOLUTIONS.

The committee on final resolutions would respectfully report as follows:

That the thanks of the Minnesota State Horticultural Society and the Minnesota State Amber Cane Association, at their annual meeting in joint convention assembled, are due and are hereby tendered to the Chamber of Commerce and to the citizens of St. Paul for the generous entertainment of the members during the session; making our sojourn in the beautiful capital city pleasant and agreeable. That our thanks are also due to the St. Paul, Minneapolis & Manitoba; the Chicago, Milwaukee & St. Paul; the Chicago, St. Paul & Omaha; Chicago & Northwestern; the Minneapolis & St. Louis; the Northern Pacific and the St. Paul & Duluth railroads, for rebates from regular passenger fare; to the editors and reporters of the daily newspapers in this city and in Minneapolis, for full and copious reports of our deliberations; to William King, of St. Paul, for the magnificent display of flowers; to Gov. Hubbard, for the use of the hall which we find so comfortable and convenient for meetings of a public character, and finally we wish to congratulate the members upon the favorable auspices which has attended their labors on the present occasion, and we venture to predict that the future labors of the two organizations will be fraught with much moment to the whole Northwest.

Respectfully submitted,

JOHN H. STEVENS,
JOHN S. HARRIS,
EDWARD D. PORTER.

SUMMER MEETING.

Mr. H. F. Busse called attention to the matter of fixing a location for the summer meeting and moved that it be held at Minneapolis.

Col. Stevens said he wished to see the meeting held at the experimental farm.

Mr. Smith said the meeting might be held, perhaps, at the Coliseum at Minneapolis.

Mr. Dartt. It seems to me that it is all right to go to Minneapolis next winter, but we should go there with the understanding that under favorable conditions we should meet here again the following winter.

Col. Stevens. That is the understanding.

Mr. Smith. We want three summer meetings.

President Smith. That can be left with the executive committee.

Mr. Dartt. I object. The executive committee is a creature of this society. There are good arguments in favor of having the summer meeting when small fruits are in a condition to exhibit. But if we have one meeting it seems to me that is sufficient for the small fruit growers. People don't like to expend their money and time in order to attend a sort of jubilee, as I understand these meetings are usually sought to be made; at least I got the impression from the report last year that the meeting was of that character. They came together and had strawberries and cream and had a good time. That is all very nice and I want them to have it.

The motion was amended that the summer meeting be held at Minneapolis at a time and place to be designated by the executive committee, and adopted.

RASPBERRIES.

The raspberry list was then taken up. For general planting the following were recommended:

Doolittle; nine votes for, none against.

Seneca; seven for, three against.

Mammoth Cluster; seven for, three against.

Gregg; five for, one against.

A member asked why there was any opposition to the Gregg.

Col. Stevens. I have seen that variety growing in Olmsted and Rice counties.

Mr. Smith. Who was growing them in Rice County?

Col. Stevens. I saw them growing at Morristown.

Mr. Smith. I have had many persons tell me they had them, and when I came to examine them, found they had the Seneca Blackcaps. Orders are often filled with the Seneca.

Mr. Gideon. I got mine from a nursery in St. Louis, and part of them from Ohio. I would remark here, that we planted a patch which faced to the south, in a very warm situation, and the canes killed back in the winter; we grew a patch on a northern exposure, and they did amazingly well.

Mr. Latham. I planted some of the Gregg Blackcaps several years ago, in parallel rows with the Doolittle, which have done well with me for fifteen years. They made a good growth the first year; the next year they killed down to the snow, and we have picked, perhaps, a pint of berries from a row one hundred and fifty feet long. The next year they were killed entirely, and I think I had the genuine Gregg.

Mr. Whipple. I know of at least ten persons who have the Gregg on the banks of Minnetonka. It is a large, showy berry, but not as good as the Doolittle. It needs different cultivation to succeed well, and my experience is that we cannot raise as much fruit from it as from the Doolittle, and not nearly so good; but still we can raise a showy berry that will outsell the Doolittle in the market, by the quart.

Turner was adopted; ten for, none against.

Philadelphia, adopted; eight for, three against.

Cuthbert, adopted; thirteen for, none against.

President Smith said the plants of the Hansell were too high, but they might recommend it for trial.

CURRENTS.

Red. Red Dutch, adopted; eleven for, none against.

Victoria, adopted; eight for, none against.

White. White Grape, adopted; nine for, none against.

Black. Black Naples, adopted; three for, two against.

Fortrial, Stewart's Seedling, adopted; eleven for, none against.

Sias' Seedling, adopted; two for, none against.

Prince Albert, adopted; nine for, none against.

GOOSEREBERRIES.

American Seedling, adopted; ten for, none against.

Downing's Improved, adopted; thirteen for, none against.

NATIVE PLUMS.

For general planting, Harrison's Peach, adopted; nine for, none against.

Forest Garden, adopted; six for, one against.

Weaver, adopted; five for, none against.

De Soto, adopted; eight for, none against.

Mr. Sias moved to recommend the Rollingstone for trial. It is a native, raised by O. M. Lord, of Minnesota City.

Adopted; nine for, none against.

Mr. Sias. The Rollingstone has been sent out under the name of Minnesota Plum, by H. M. Thompson, of St. Francis; I have it from Mr. Thompson himself that it is one and the same thing.

STRAWBERRIES.

For general cultivation. Wilson's Albany seedling, adopted; ten for, none against.

Mr. Ford said he had the best success with Charles Downing. On light sandy soil I did not succeed very well.

Mr. Smith. It should be borne in mind that berries that succeed well on clay will do hardly anything in sand. On heavy black soil the roots will be large.

Charles Downing, adopted; six for, none against.

Downer's Prolific, adopted; five for, none against.

Green Prolific, adopted; three for, two against.

Crescent Seedling, adopted; nine for, one against.

Mr. Whipple. The Capt. Jack succeeds in some localities, but with me, if you would bring me 10,000 plants I would not give ten cents for them; it smothers out. They are nice looking berries. The hulls are left on the vines; you can't ship them in good shape.

President Smith. With me it is as profitable as anything else.

Mr. Ford. On Mr. T. M. Metcalf's Northwestern Seed Farm, at White Bear, Capt. Jack has done about the best of anything.

Capt. Jack, adopted; five for, two against.

Mr. Ford. Windsor Chief I think is the finest strawberry I

have ever raised without any exception. I set a thousand plants. I move to put it on the list for trial.

Adopted; five for, none against.

Cumberland Triumph, adopted for general trial; three for, none against.

Miner's Prolific, adopted; four for, none against.

For trial, Bidwell, adopted; five for, none against.

Iowa Prolific, adopted; five for, none against.

Minnetonka Chief, adopted; seven for, none against.

Manchester, adopted; seven for, none against.

James Vick, adopted; seven for, none against.

Old Iron Clad, adopted; six for, none against.

BLACKBERRIES.

Stone's Hardy, adopted; seven for, none against.

Ancient Briton, adopted; seven for, none against.

FRUIT LISTS.

The following is a recapitulation of fruit lists as adopted:

APPLES.

For general cultivation—Duchess, Wealthy.

For planting in limited quantities in special locations—Tetofsky.

For general trial—Yellow Transparent, Peach Apple, Red Anis, Smelling Apple, Lieby, Swan, Little Seedling, Longfield, Hibernial.

SEEDLING APPLES.

For trial—Rollins' Pippin, Elgin Beauty, Giant Swaar, Kimball.

CRAB APPLES.

For general planting—Beach's Sweet, Orange, Early Strawberry, Whitney No. 20.

For planting in limited quantities—Virginia, Hyslop.

GRAPES.

For general planting—Concord, Delaware, Moore's Early, Worden.

For planting in limited quantities—Rodger's No. 15, Rodger's No. 9, Martha, Rodger's No. 44, Kramer's Seedling.

STRAWBERRIES.

For general cultivation—Wilson's Albany Seedling, Charles Downing, Downer's Prolific, Green Prolific, Crescent Seedling, Capt. Jack, Windsor Chief, Cumberland Triumph, Miner's Prolific.

For trial—Bidwell, Iowa Prolific, Minnetonka Chief, Manchester, James Vick, Old Iron Clad.

RASPBERRIES.

Blackcaps; for general planting—Doolittle, Seneca, Mammoth Cluster, Gregg.

Reds—Turner, Philadelphia, Cuthbert.

BLACKBERRIES.

Stone's Hardy, Ancient Briton.

CURRANTS.

Red—Red Dutch, Victoria.

White—White Grape.

Black—Black Naples.

For trial—Stewart's Seedling, Sias' Seedling, Prince Albert.

GOOSEBERRIES.

American Seedling, Downing's Improved.

NATIVE PLUMS.

For general planting—Harrison's Peach, Forest Garden, Weaver, De Soto.

For trial—Rollingstone.

There being no further business before the meeting, on motion adjourned.

MEETING OF THE EXECUTIVE COMMITTEE.

A meeting of the executive committee was held at 2 o'clock P. M., January 23, 1885, all the members of the committee being present, to-wit:

Messrs. Harris, Underwood, Elliot, Day and Pearce.

The following bills were audited and ordered paid:

Two hundred railroad return tickets.....	\$1 50
Two hundred plates, furnished for winter meeting.....	2 00
A. W. Sias, expenses on seedling committee.....	10 00
Mrs. Tillson, expenses and preparing essay.....	7 50
C. L. Smith, services as assistant secretary, \$5; printing and postage, \$10.75.....	15 75
President T. M. Smith, postage and incidentals.....	10 00
J. M. Underwood, executive committee, meeting and postage.....	5 00
Total.....	\$51 70

The following committees were appointed for the ensuing year:

Committee on Seedling Fruits — J. S. Harris, La Crescent.

Committee on Nomenclature — A. W. Sias, Rochester; E. H. S. Dartt, Owatonna; Wyman Elliot, Minneapolis.

Committee on Forestry — S. M. Emery, Lake City; F. G. Gould, Excelsior; M. Cutler, Sumter.

Committee on Fruit Blossoms — C. W. Hall, Minneapolis; George P. Pepper, Pewaukee, Wis.; M. Pearce, Minneapolis.

Committee on Russian Apples — A. G. Tuttle, Baraboo, Wis.; A. W. Sias, Rochester; Andrew Peterson, Waconia.

Committee on Vegetable Gardening — Knight H. Whipple, Northome; Fred. Busch, Richfield; W. H. Brimhall, St. Paul.

Committee on Small Fruit. — Prof. L. Asire, Minneapolis; O. M. Lord, Minnesota City; Isaac Gilpatrick, Minneapolis.

Committee on Floriculture. — Mrs. C. O. Van Cleve, Minneapolis; Mrs. A. Morse, Minneapolis; Mrs. J. F. Rodgers, Lake City.

General Fruit Committee. — Sidney Corp, Hammond; D. K.

Miechenor, Etna; Charles Brendermule, Moorhead; C. E. Shannon, Granite Falls; O. F. Norwood, Balatine, Lyon County; M. C. Bunnell, Newport; J. N. Stubbs, Long Lake; George S. Barnes, Fargo, Dak.; William McHenry, St. Charles; O. M. Lord, Minnesota City; Clarence Wedge, Albert Lea; E. Meyer, St. Peter; M. Cutler, Sumter; G. W. Fuller, Litchfield; L. E. Day, Farmington; Charles Ludluff, Carver; W. E. Brimhall, St. Paul.

It was decided to leave the list of superintendents of experimental stations of last year unchanged.

Mr. Harris stated that he would conduct the business of the committee on seedling fruits without expense to the society.

On motion the secretary was instructed to write to the superintendents of the experimental stations and ascertain if they are conducting the experiments in accordance with the proposed plan under which the system was established; if not, to report to the executive committee.

On motion Wyman Elliot and Secretary Hillman were appointed a committee to prepare and address a circular letter to leading horticulturists throughout the State to ascertain the condition of fruit and fruit prospects in the State, etc.

It was suggested by Mr. Isaac Gilpatrick that a premium of five dollars be offered on the largest amount of strawberries grown on four square rods of ground, contributors to give character of soil, variety grown, mode of cultivation, etc. Also the same for raspberries.

The meeting then adjourned.

SECRETARY'S PORTFOLIO.

DEFERRED PAPERS, REPORTS, APPENDIX, NOTES, EXTRACTS,
ETC.

INTRODUCTORY NOTE BY THE SECRETARY.

The following pages have been prepared for publication in addition to the transactions of the society, containing a number of papers, extracts, suggestions, and information of more or less interest, not properly belonging to the routine report.

Owing to a press of other duties we have not had as much time at our disposal as was desirable for the arrangement and preparation of the subject matter of the present volume for publication. Our acknowledgments are due to those who have kindly contributed to this department of the work. We regret that lack of space precludes the giving place to several interesting papers and other miscellaneous matter, of value and interest to horticulturists, more particularly several contributions to the reports of kindred societies in neighboring states; but these volumes are within the reach of those who desire to obtain them. To attempt to embody within the present volume any considerable portion of the discussions and interesting information to be gleaned therefrom would be impracticable, however desirable such an undertaking might seem to be.

Horticulture is a science, the study and advancement of which is well worthy of emulation; it has reference to the comfort, the beauty and the refinement of home and its environments, conducing to the promotion of the enjoyments, the pleasures, and the real luxuries of civilized life. Of an æsthetic nature, it promotes refinement in the family circle, as shown in the cultivation of beautiful plants and lovely flowers; tending to the adorn-

ment of home and its surroundings. It teaches the best and most approved methods for the embellishment of both city and rural homes, made pleasing and attractive by the propagation, culture and care of fruit, shade and ornamental trees, shrubs, plants, vines, and flowers. In short, it embraces a wide field for investigation, study and labor, and affords its votaries ample and lasting reward for all well directed effort. Horticultural work is at once pleasing, elevating and delightful, and the possibilities to be accomplished almost unlimited.

The Minnesota State Horticultural Society, as its name implies, is comprehensive in its objects, plans and purposes. The objects of the society are aptly set forth in its constitution as being "to improve the condition of pomology, horticulture and arboriculture, by collecting and disseminating correct information concerning the culture of such fruits, flowers, trees, and other productions in horticulture as are adapted to the soil and climate of Minnesota."

Originally designed and organized as a fruit growers' association, we find upon examining the record of its early work and history, that the organization has since greatly widened its scope and general character; that it has measureably extended its power and influence; that its roll of membership has steadily increased from year to year in numbers; and the organization now includes within its ranks very many of the most thoroughly efficient, active, and earnest workers to be found in the varied branches of horticultural labor within the limits of the State and in the Northwest. It will be apparent to the most casual observer that the society has made this encouraging growth and progress, that it occupies an advanced and meritorious position as an organization, and that it aims to benefit not only the fruit growers of the land, but to seek out, foster and encourage the best and most advantageous methods to be followed in all departments of horticulture. That such should be its mission no one will gainsay or deny. Its officers and members recognize the obligations which seem almost imperatively imposed; most cheerfully, too, would they discharge their several duties, and seek to place it on a plane of usefulness, where it shall be a means for good, establishing for itself a character which shall give it strength and power, and wield an influence which commands respect and gains the confidence of all.

The rewards bestowed on well directed horticultural industry and toil are numerous and varied; the mere suggestion carries

with it glowing pictures of possibilities to be found within the realm of Nature and her gifts; it clothes the home with all the loveliness of spring, adorns, beautifies, and fills the land with all the luxury of choicest fruits and flowers. What fields are opened for investigation; what varied conditions to be studied, learned, and practiced; what changeful climate; how much depend on heat and cold, seed time and harvest, selection and care, rain and drought, machinery, markets, protection from insects, culture, economy, and skill! All these and many other things must be considered within the realm of horticultural knowledge and investigation.

It is the aim within the limits of the present volume to give a somewhat brief and at the same time faithful outline of the work, transactions, plans and purposes of the associations whose reports are found herein contained; to group in a convenient form for ready reference, such other information as we may, that all who scan its pages in present or in future time, may find some food for thought, some facts of value, the whole to constitute a work to be esteemed of use, and worthy to be given to a friend.

We would enlist in this important work the humble cottager, the sturdy farmer, the skillful artisan, the busy merchant, the thoughtful student, all of every character and calling, to join hands with us in earnest effort to advocate, sustain and push our worthy cause. Especially do we invite our lady friends to join us in our work and teach us by their skill, their well known love for all that's beautiful and true, to emulate examples of the useful and the good, and gain that plaudit of success which finds expression in the words "well done."

"I know not which I love the most,
Nor which the comeliest shows,
The timid, bashful Violet,
Or the royal-hearted Rose;

"The Pansy in her purple dress,
The Pink with cheek of red,
Or the faint, fair Heliotrope, who hangs,
Like a bashful maid, her head.

"For I love and prize you one and all,
From the least low bloom of spring
To the Lily fair, whose clothes outshine
The raiment of a king."

ENTOMOLOGIST'S REPORT.

BY R. J. MENDENHALL.

Mr. President and Gentlemen of the Horticultural Society:

While highly appreciating the honor you have conferred upon me by naming me your entomologist, I feel it my duty to the society and to myself to tender—with the few accompanying notes on insects—my resignation of the position. I do this with reluctance, for if I had leisure and strength for the work, although not considered a meddlesome man, nothing would give me greater pleasure than to spend my days “peeking and prying into the ways and manners” of our six-legged inhabitants, and to wage a war—allowable even for a Quaker—against the flying and crawling armies that come up every year to take possession of the products of our toil and care. I should delight to report to you annually of all these things, to warn you when a new enemy was approaching our borders and to suggest the best methods of defense against those already in ambush among us; but poor health and a pressure of other business make the necessary observations and experiments impossible for me.

About a year ago (February, 1884), while in pursuit of health and recreation in Mexico, I kept my eyes open for the tropical insects of which we read such wonderful accounts, and was rather surprised at their scarcity. It was not the season for the full flutter of insect life, but, considering the high temperature and the luxuriance of vegetation, it seemed strange that so very few species should be on the wing.

In Vera Cruz I took a *Papilio*, resembling our *P. asterias*, except that the under wings, instead of being ornamented with blue and yellow, were almost entirely of a deep red color, making it a very characteristic and beautiful species. I also collected near the city of Mexico a lot of cocoons from a tree called by the natives the Wild Olive, which had been almost stripped of its leaves by the caterpillars. The cocoons were about the size and shape of those of our *Attacus cecropia*. On my return home I left them with an entomological friend in Kirkwood, Mo. When the moths developed I was informed that they were the rare and beautiful *Attacus cinctus*, Tepper, a semi-tropical species which had been first discovered and described less than a

year before, by a Brooklyn, N. Y., entomologist, who found them in Southern Arizona. The moth is similar in size, form and general color to the cecropia. The extended wings measure about five inches from tip to tip, and each one is ornamented in the centre with a large, transparent, triangular spot. A white band crosses the body just back of the thorax and extends laterally around the abdomen.

If your entomologist had only gone to Mexico a year sooner he might have been the first to find this magnificent insect. Except certain unpleasant domestic pests these were the only insects met with. Beetles were still in winter quarters and so secluded that it was impossible to ferret them out.

But I turn to the insects in which we have a more practical interest. In the summer of 1881, the Linden or Basswood trees all around Minneapolis were attacked in force by a leaf-rolling larva that had never been seen here before. Its ravages were so serious on some trees as not only to greatly disfigure them and check their growth, but to actually endanger their lives, and there was scarcely a tree that was not more or less infested. The leaves were slit first across from one edge beyond the mid vein and then in a curve toward the tip but not quite severed. This part was neatly rolled into the form of a cone-shaped bag fastened with bands of silk to keep it in shape and had both ends neatly tucked in. The mischief maker could be found, on unrolling this odd little case, securely housed in the centre, engaged in dining on the inner walls of his house. He was a pea-green, stout, worm-like fellow with jet black head, collar and thoracic legs. When he had gained his full size he drew a part of his case closer around him, lined it with silk and changed to a slender brown chrysalis.

I neglected to gather any of these cases early in August and when I did collect later in the month, all the moths had escaped. A large proportion of the pupae had evidently been destroyed by parasites. The work of the latter, aided perhaps by climatic conditions, must have been unusually thorough, for during the following summer I could not discover a single rolled leaf even on the trees that were most abundantly infested the year before. Nor did any appear in 1883, but last summer they were again on hand in moderate numbers.

In the fall of '82 Prof. Fernald discovered what is undoubtedly the same insect on the Basswoods around Bangor, Maine, and he was fortunate enough to get the moth which proved to be a

pyralid, *Pantagrapha limitata* Grote. As I have never seen the moth I cannot describe its appearance, but the stage in which it commits its depredations on our shade trees is the one in which we are most interested and of that I have already given an account. There are probably two broods in a season, the second of which winters over in the rolled leaves, and, should the insect ever become statedly troublesome, the best way of reducing its numbers would be to rake up and burn the fallen leaves of infested trees late in the fall.

Among the various leaf folders and small web worms that infest the apple tree, one called the apple leaf sewer (*Phoxopteria nubeculana*, Clem.) has no doubt already attracted the attention of our orchardists. The larva of this species is a small roughened caterpillar half an inch long and about a tenth of an inch in diameter, of a dull green color, with a pale brown head and collar and the surface sprinkled with brown horny dots from each of which arises a pale, shining hair. This larva folds the leaf lengthwise with the upper surface inside and feeds upon the green tissue principally near the outer edges. It makes its appearance in July, and when full grown lines the inside of its case with silk and becomes dormant. The folded leaves fall to the ground in due season, but the little caterpillars within them come to no harm, and when spring returns they change to slender, brown chrysalides, from which the moths issue in May and June—the chrysalis having previously forced itself through and partly out of the case.

The moth is a handsome Tortrix measuring nearly an inch across, the extended wings, which are of a milk white color, beautifully ornamented with pale and dark brown spots and shadings. There seems to be but one distinct brood of this species in a season; but it is so irregular in its development, the moths coming out a few at a time and not laying their eggs all at once, that one may find larvæ of all sizes and leaves freshly folded as well as others dry and skeletonized, from July to September.

In some orchards in Northern Illinois and Wisconsin last year almost every third leaf was folded, to the great disfigurement of the trees. This species, like the Basswood leaf rollers, may be kept in check by gathering and burning the leaves before the snow falls.

There is but little new to report concerning the common orchard pests, such as the canker worm, the tent caterpillars, the

fall web worm, the round-headed and flat-headed borers, the bark louse and the codling moth, except that some new ways of fighting them have been tried with more or less success. The kerosene emulsions with milk or soap are coming more and more into use, their principal recommendation being that they are less dangerous to man and the higher animals than Paris green, and are equally deadly in their effects on the "bugs." The only difficulty is to get the oil so strongly mixed with the dilutants that it does not fall in "splashes" on any part of the plant. For use on large trees a force pump is necessary for its application, and this also keeps the fluids well stirred. A tree syringe answers very well for small trees and other plants. For use on leaf-feeding insects a ten per cent mixture is strong enough, but for scale insects a larger proportion of kerosene may be used, and in all cases it must first be thoroughly emulsified with at least an equal quantity of milk or strong soapsuds, and the water added later. Before concluding I wish to say a word on the *aphis*. This is an insect that "we have always with us" in one form or another. Scientific entomologists have described a great number of species, and make much of the differences between them, which they find in the way a vein in the wings curves here in one, or branches off there in another, or is entirely wanting in a third; whether the honey tubes are long or short, or whether the skin is covered with cottony or waxy secretions, or is smooth and polished. The main points of structure in which the horticulturist and farmer are interested are the *beaks* with which they abstract such large quantities of the sap that was prepared for the nourishment of leaf and blossom and fruit, and that they multiply at a rate beyond any "arithmetical progression" for which we can find rules in books.

Most of the so-called "scab" on apples is undoubtedly due to punctures and exudations of the common apple tree plant louse (*aphis mali*). This insect hatches with the unfolding of the buds in the spring, and swarms on the tender leaves. All the lice hatched in the spring are agamic females which, in about a week, begin to reproduce themselves, not by the usual and slower process of laying eggs, but by a plan analogous to the propagation of plants by buds and slips, by which the young lice are brought forth alive and about half grown. In the course of a day or two these are also adding to the population in the same way, and it will be evident that in a very short time a single *aphis* will be the original parent of an immense colony. Each louse, as soon

as safely on its feet, plunges its beak into the leaf or branch on which it finds itself, and begins pumping up sap with all its strength. It is never satiated, and only withdraws its beak for a brief interval two or three times, when it molts its skin, or to seek a fresher leaf if the one first attacked becomes too dry.

Nature provides against its being gorged with the sweet juices by furnishing it with two little tubes or outlets on the back, through which the superfluous fluids exude in the form of "honey dew." This very shortly turns black and moulds, while the punctures of the insects distort the tender twigs and cause the leaves to curl and wither, so that a badly infested tree is a most unsightly object. That sound, well-flavored fruit will be produced on a tree under such circumstances is not to be expected. Wherever the young apples are punctured by the aphides, or are spattered with honey dew, the skin becomes rough and warty, and the form and flavor of the fruit is proportionately impaired.

Toward the end of summer the true male and female aphides are developed, and the latter, instead of producing living young, lay large numbers of eggs. These are very minute and of a shining, black color, and are placed in the cracks of the bark on the trunk and large branches. By means of these eggs the species is perpetuated through the winter. The best preventive, therefore, against the attacks of this pest is to have all the outer loose bark scraped from the trees, and have them thoroughly washed with strong soapsuds or whitewashed. This should be done during mild days in winter, or very early in spring. Many hibernating enemies of the fruit and foliage, besides these plant lice, will also be exterminated by these measures.

When the aphides appear in the spring they can be cleaned off by a thorough dusting with air-slacked lime and Pyrethrum powder, or by the use of a small quantity of Paris green in liquid suspension.

All plant lice have a great many natural enemies, which, even without artificial remedies, greatly reduce their numbers in the course of the season, but they often do irreparable damage before the lady-birds and syrphus flies make their appearance in effective numbers.

The history of this aphid is in the main the history of most of the species that attack cultivated plants, although different measures have to be employed for destroying them.

In his last report, Prof. Forbes, the State entomologist of Illinois, describes several species that had proved very injurious

of late years to sorghum. One of these was the corn plant louse (*Aphis maidis*), a bluish green or lead-colored species, which works just as it does on corn, on the opening leaves and tassels, and did considerable damage, but a far more injurious species was one that had not been previously described, a bright yellow plant louse, with rows of black points on the back, which works on the older leaves, stalks and roots. Two or three other kinds attack various parts of the plant, but are not so destructive. All these lice have the usual natural enemies, but Prof. Forbes was not able to suggest any practicable artificial remedy except the lime and superphosphate fertilizers.

FRUIT PROSPECTS IN SPRING OF 1885.

During the latter part of March, circulars of inquiry were sent out to leading horticulturists and others, for the purpose of obtaining information concerning the effect of the severe winter upon fruit trees, shrubs, plants, vines, etc., and the outlook for fruit the present season. Replies have been received from a number of persons which are herewith appended. The spring being quite backward it was not expected that as accurate and satisfactory reports could be had as might otherwise have been obtained, but it was thought that the effect of the extreme cold weather might be seen more especially in the orchards and nurseries. The reports received are not encouraging, but on the whole not as gloomy as was to be expected. The circular referred to was as follows:

CIRCULAR LETTER.

MINNEAPOLIS, MINN., March, 1885.

DEAR SIR: In view of the interest taken in orcharding and horticultural pursuits in Minnesota and throughout the Northwest, as manifest at the late annual meeting of the Minnesota State Horticultural Society, its executive committee, at that meeting, appointed the undersigned a committee to prepare and address a circular letter to leading horticulturists and others interested in these pursuits, asking for such information as they might be able to give upon these subjects.

The past winter has been one of remarkable severity and much anxiety has been felt upon the part of horticulturists concerning the condition of fruit trees, shrubs and plants, especially in unfavorable situations. Careful examinations are requested, of trees in orchard or nursery, in order that reliable data may be obtained.

Please answer the following questions and to the point, and return as promptly

as possible, in order that the information elicited may appear in the forthcoming report of the society.

1. How has the past winter affected standard varieties of apples?
2. What varieties, if any, have received no injury?
3. What varieties have sustained least injury?
4. Describe the character of the injury.
5. What is the condition of Russian varieties in your locality?
6. Have you, or do you know of any that have withstood the past winter without injury?
7. What is the condition of Siberians and hybrids?
8. Have you, or do you know of any seedling, or unknown variety of apples which has come through the winter unharmed, or which promises to be of value? If so, state section, township and range, age, locality, with description of fruit, etc.
9. State character of soil, exposure and what protection, if any, to trees.
10. What is the present condition of strawberries, raspberries, currants, blackberries and grapes? Is the prospect favorable for a good crop of fruit?

WYMAN ELLIOT,
S. D. HILLMAN,
Committee.

Please answer the foregoing as far as practicable and forward to the secretary of the society.

S. D. HILLMAN,
Minneapolis, Minn.

FROM PETER M. GIDEON, SUPERINTENDENT EXPERIMENTAL FRUIT FARM.

EXCELSIOR, MINN., March 28, 1885.

All varieties of apples and crabs are discolored more or less, but the extent of the damage cannot be told as yet. By next fall we can tell what varieties have the inherent vitality to recover from the shock, and until then I don't propose to commit myself for or against anything.

The following article from the pen of Mr. Gideon will be found of interest in this connection.

DAMAGE TO FRUIT TREES.

Editor Farm, Stock and Home:

I have been out to-day examining the apple prospects for the coming season, and am sorry to say that the prospect is anything but flattering. The damage far exceeded that of any winter since we first began the cultivation of the Crab, Duchess and Wealthy. Never before did they discolor so bad, or come so near losing their entire crop of fruit buds. All varieties are discolored more or less in their last year's growth, though many of them

had gone through twenty winters unharmed, showing this to be the hardest on fruit trees ever had. Not that the winter was the coldest, for we have had colder, and no damage done the trees. Evidently it was the condition in which the trees went into winter with sap up. They ripened up early and shed a part of their leaves; then came a warmer spell, started the sap, revived the remaining leaves and swelled the fruit buds almost to bloom—too far out to stand any degree of cold—consequently on many varieties all fruit buds are dead, and a prospect of a short crop on the balance. But as yet we can't determine the full extent of the damage, the inherent vitality in each variety to surmount the shock hold their fruit and outgrow the discoloring; but by next fall we can tell quite correctly what varieties can stand best to have winter close in on them with their sap up; or, in other words, which variety has the most Siberian crab in its composition of tree, for it is the crab nature that carries through when winter catches the sap up. With us the young Wealthy trees stood full as good as the best of the Russians, side by side, same age and size of tree, and all showed more or less damage. The Russian pears all killed—my last hope gone of pear culture in Minnesota.

PETER M. GIDEON.

State Fruit Farm, Minn., March 17.

FROM CLARENCE WEDGE.

ALBERT LEA, Minn., March 26, 1885.

Not being an expert I cannot thus early in the season ascertain accurately what damage the past winter has done to the fruit of any kind; but the Duchess, Wealthy, Tetofsky and Elgin Beauty appear to be substantially uninjured. Some terminal buds on rank growths of Wealthy are killed, and Rollins Pippin are seriously injured. My grapes are not yet uncovered. The Worden, Moore's Early, Cottage and Concord ripened their wood well last fall and I expect to see them come out well this spring. The Telegraph and Prentiss were caught by the frosts with very immature wood, and although in the same soil and situation as the above mentioned varieties, I fear they were badly injured.

FROM RED RIVER VALLEY.

MOORHEAD, MINN., April 9, 1885.

Your circular letter of March 26th last duly received. Did not answer at once in order to see effect produced by warmer temperature after the severe winter's freezing on stocks. Before answering your inquiries would first make a general statement. I have tried a number of apple trees, planted when three to four years old and procured from different nurseries in Minnesota. I cannot now remember all the varieties I experimented with but am positive of having tried the following: Emperor, Alexander, Tetofsky, Duchess, Walbridge, Haas, General Grant, Soulard Crab, Whitney No. 20, Beach's Sweet, Sylvan's Sweet, Wealthy, Minnesota, Hyslop and Transcendent. The following all died during the first winter and summer following first winter after planting: Alexander, Walbridge, Haas, General Grant, Soulard and Minnesota. Badly injured: Tetofsky, Duchess and Wealthy. Injured some: Whitney No. 20, Beach's Sweet, Sylvan's Sweet and Hyslop. Never injured by winter only for the last two years by blight: Transcendent. But of the plantings of years ago none ever bore fruit or revive now except Transcendents. Finding experimenting with two to four year old trees too expensive to judge by experience had, I commenced with root grafts of the following: Whitney No. 20, Wealthy, Beach's Sweet and Sylvan's Sweet. The first year's growth all got winter killed. In the spring I cut off dead wood and those that made a new growth, nearly all winter killed the following winter; that is, most of the trees and nearly all the summer's growth; Wealthy the most so. Pruned down dead wood again of the remaining trees, and they made a fine growth that summer. Dug all the remaining trees out in the fall and buried them; planted again in spring of 1884. All made a fine growth last summer but attaining only a height on the average of from two to four feet; left them out over winter. Examined them to-day and find that last summer's growth and some of summer before buried killed in Wealthy; Whitney No. 20, Beach's Sweet and Sylvan's Sweet, new growths of last summer about half dead. About a dozen Transcendents of same age and same treatment, sound to the tips.

Will now answer circular letter by numbers.

1. Have none except noted before.

2. Have none except noted before.
3. Have none except noted before.
4. Have none except noted before.
5. Do not know of any in this part of State.
6. Do not know of any in this part of State.
7. None proved entirely hardy but Transcendent. Do not know of any Siberian crabs alive around here now.
8. Have two seedling crabs; received them among Transcendents years ago for Hyslop; bore fruit now for three years; apples small and very acid. Color, light yellow green. The next is a larger apple, shape more regular, color white waxy. Have planted seeds of both and would like to know if the stock might prove of value for top grafting; it will do for rootgrafting; trees perfectly hardy, more so if possible than Transcendant (T. 142, R. 48,) age twelve years.
9. Deep black loam. Exposure southeast. Protected on south by planted timberbelt 50 feet wide; on west and north by Red river and belt of timber in bottom along its banks.
10. Raspberries have only succeeded with the native ones, indigenous here. Currants all right and prospects for crop very good. Strawberries, too soon to tell about. No Grapes to my knowledge, of cultivated sorts here. Have given up long ago to attempt any further trials. Imported Blackberries last spring but have not uncovered them yet, covered them with earth last fall knowing by former experience that they winterkill here.

FROM R. L. COTTERELL.

DOVER, OLMSTED COUNTY, MINN., March 28, 1885.

I acknowledge the receipt of your circular. I am sorry that I cannot give you the desired information; I wish I could. I am anxious to read all I can relative to the subject. I have not been able, from the examination I have given my trees thus far, to arrive at any definite conclusion.

FROM M. CUTLER.

SUMTER, MINN., March 31, 1885.

Wealthy badly used up; Duchess injured some. Whitney No. 20 seems to be all right, and Transcendent in pretty fair shape;

new growth killed back some. Strawberries injured some. Think there will be a fair crop of berries if the season is favorable. Turner and Cuthbert raspberries injured some; cannot tell how badly until growth commences. Currants seem to be all right. The Snyder, Taylor's Prolific and Stone's Hardy blackberries are badly injured. I look for a light crop of fruit this year.

FROM PRESIDENT T. M. SMITH.

ST. PAUL, MINN., April 3, 1885.

In answer to questions in circular of inquiry, would say that my orchard shows considerable injury from the severe winter. Wealthy badly discolored; Duchess not so much. Have two or three Russian varieties that appear to be uninjured, even to the terminal buds. Where the bark is discolored it is difficult to say the exact extent of the injury; am of opinion the trees will recover. Have not examined other orchards. Mine is on northern exposure, on high land, with no protection to trees. Strawberries covered with wheat straw and all right; covering not yet removed. My raspberries were hurt some, especially Cuthbert and most of the blacks. Hansell and Crimson Beauty appear to be hardy; Henfietta killed to the snow line. Currants uninjured. Grapes are well covered and unable to report on them. Think the prospect for small fruit as good as usual, but the apple crop likely to be less, although it is rather early to determine with any degree of certainty.

FROM J. S. HARRIS, OF LA CRESCENT.

LA CRESCENT, MINN., March 31, 1885.

I am making an examination of the trees in my orchard, and noting the visible effects of the last winter upon the same, find

1—That nearly all varieties of the standard apples have sustained injury from the severity of the past winter.

2—The injury to Duchess, Tetofsky, Peach, Wealthy, and McMahon's White is only a slight discoloration of the ends of the twigs of last year's growth, that were forced by the pleasant weather of last autumn to make a new start after regular growth had ceased, and will not materially affect the vitality of the trees.

3—Haas, Talman Sweet, Utter, and Willow Twig are in-

jured in twig, and occasionally in the axils of the branches, but will probably recover and fruit again; Walbridge is not very much hurt in the branches, but shows bark burst in the trunks. St. Lawrence is not very badly injured except in very old trees. Fameuse, Plum Cider, Ben Davis, Perry Russet, and most other varieties are apparently used up.

4—In no instance do I discover any injury to the roots.

5—There are but few of the newer Russians growing here; their condition is about the same as the Duchess and Tetofsky; except that I find the Red and Yellow Anis, and two other varieties not known, show no injury.

6—Of Siberians and hybrids, Transcendent, Early Strawberry, Pride of Minneapolis, and Whitney No. 20 are all right. Most others that I am growing show some discoloring in ends of the twigs. Maiden's Blush and General Grant seriously injured.

7—Seedlings that I have been looking after are some distance from here, and I have not time to visit them at present; will report later. Trees of Rollins Pippin, and Giant Swaar, procured from A. W. Sias, of Rochester, promise well.

8—The soil of my orchard is chiefly sandy loam to clay loam; southern and eastern exposure, protected on north and west by high bluffs and forest; no special protection has been given; snow has been deep and ground unfrozen.

9—Strawberries have wintered well; currants the same; so have native plums; Blackcap raspberries injured above the snow line, Turner and Cuthbert at the tips.

Grapes, where dropped to the ground, all right. Two vines of Moore's Early that were left up appear uninjured. Blackberries all killed except where covered.

The prospect is favorable for an average crop of strawberries, currants and grapes; present indications point to a light crop of apples. I have a few apple trees on a northern exposure that appear better than those on the southern.

FROM WM. FORSTER.

CHATFIELD, MINN., March 31, 1885.

Have a few hybrids and Siberians; do not see as they are hurt. Also my standards and seedlings. It has been a very severe winter, but the sudden changes are what hurts our trees, and there was very little of such weather this winter. I have some of my seedling apples yet in the cellar, and they are keeping well. They are the Forster Red Winter.

FROM S. BARTER, OF GREEN LAKE COUNTY, WIS.

MARKESAN, April 4, 1885.

In answer to your ten questions in circular letter of March, 1885, I would state that it is early in the season to give a correct answer as to the injurious effects of the past severe winter on fruit trees, etc. My impression is, that shrubs and trees that are not iron-clad in their hardness, have suffered materially. I have a Flemish Beauty pear tree that has grown well for two summers; now I think it is dead, as the wood is black. The Duchess, Wealthy, Tetofsky, Wolf River, and the Siberians are all right. I think the strawberries, blackberries, grapes and rose bushes that have had straw protection are all safe and sound.

FROM GEO. P. PEFFER.

PEWAUKEE, Wis., April 20, 1885.

In answer to your circular of last month I will say:

1—Trees with healthy foliage of our recommended varieties are not much injured, but those suffering from mildew, or lacking in foliage during the summer, either from hail or by caterpillars, are hurt badly, and some are entirely killed. (See list in our transactions.)

2—I only answer from examination in my own orchard; have examined none others.

10—Small fruits seem all right. Native and some of the Lombard plums all right. Buds killed some on cherries, but trees not hurt.

5—They seem good.

6—Tetofsky, Yellow Transparent, Duchess, etc., all good.

8—I. B. Smith's seedling, a handsome, new variety, which kept perfectly well and yet on our tables at New Orleans; trees not injured in the least. Dougherty, a seedling from Green Bay, Wis., also a good keeper, but do not know anything of the tree.

FROM JOHN P. ANDREWS.

FARIBAULT, MINN., April 11, 1885.

In answer to your questions:

1 and 2. All standard apples examined show more or less injury.

3. Duchess, Wealthy and Tetofsky have sustained the least injury.

4. Wood is discolored above snow line.

5. Better than most common standards.

6. No.

7. Beach's Sweet, Early Strawberry, Virginia, Whitney No. 20, Orange, Maiden's Blush, and Minnesota look very well. These, with Duchess, Wealthy and Tetofsky, will probably overcome their injuries enough to make profitable trees.

8. Have examined none but what have the last year's growth discolored.

9. Clay subsoil; a little sand in soil; elevated location; no protection.

10. Grapes covered, think all right; strawberries, where covered, are good; currants in good shape; raspberries and blackberries injured to the snow line; Turner seems to stand it best of the raspberries. A poor prospect for a good crop of fruit this year. Plums look very well.

P. S.—Inclosed find membership fee to Horticultural Society.

FROM FREMONT, WISCONSIN.

W. A. Springer, of Fremont, Wis., under date of April 3d, writes: I have spent to-day in several orchards to be able to answer your questions.

1. The past winter has injured almost all our standard varieties, in that the ends of the cions are colored; some more and some less. The Snow, Russet, Haas, Walbridge, Fall Orange, Winter Red, Plum Cider, Pewaukee, and many others, one-half or more of the cions badly colored or dead; Culvert, Ben Davis, Maiden Blush, and some other cions, all dead, and the bark on large limbs and trunk discolored, also the wood. Many trees will never leave out.

2. I know of no variety of the standard sorts that have not received some injury to the ends of cions.

3. The Duchess, Tetofsky, Fall Orange, Wolf River, and Wealthy, if they may be called standard, are very little injured.

4. Have already described injury.

5. Have few Russians; Duchess, Tetofsky, and Alexander, very little injured.

6. I do not know of a bearing standard tree that some of the cions are not injured.

7. Not a bud of the Transcendent injured; Hyslop a little colored; Whitney No. 20 is good; Lake's Winter all right; and the Calendar (new) is all right; the longest of any all winter, good and handsome, a seedling of Mathews' Russet and Web's Winter Crab.

8. I have to-day visited the seedling orchard of Mawhinney, of Lind, town twenty-one, range twelve, east, and find the Lind, Mawhinney, Baxter, Walla Walla, Garfield Sweet, Lagon's Sweet, and Helen, very little injured. These are from seed of Alexander, except Helen, which is a very large and showy apple, good quality and took first premium at our fair. The Mawhinney, Helen, and Lind are all winter.

I have also visited the Wrightman orchard and find the Wrightman Blush, Waupaca, Martha, Weyauwega, and Alden very little colored in the ends of cions; his Flora and Wrightman more discolored. Find also the Mathews' Russet and the Rich Greening very little injured. And I have not found a tree of the new apples I have spoken of injured to any extent. I visited and cut cions from Manning's Red, a nice, large, conical, red apple; just a bud or two of the ends of the cions were colored. These latter are all winter except Waupaca and Martha, which keep to mid winter.

9. The standard trees I have tried in most every soil from sand to clay, exposed and also with slight protection. The Mawhinney orchard is nearly on a level, on gravelly loam, with no protection; the Wrightman orchard has a west protection of native oaks, is a large orchard, and slopes quite heavily to the south, which I regard as the worst kind of protection; the land is very stony, with large boulders and bunch grass growing on the land in its original state. The Mathews, Wilson's Sweet, and Rich's Greening are on the same kind of soil, but sloping a trifle to the north, with no protection except from surrounding orchard.

10. Strawberries are all right where there was snow. Raspberries were badly injured above the snow line. Blackberries that were laid down are all right. Grapes are covered yet and all right.

We have many new varieties of apples in this county that are large, attractive, and good, but I have not had time to see them all. The prospect is not good for a large crop of apples.

FROM A. W. SIAS.

ROCHESTER, MINN., April 13, 1885.

In reply to your circular letter, calling for a report on the condition of our trees, after the past severe winter, will say: This action of our society in sending these circulars all over the State, asking if there is a *single variety* that has passed through the past unprecedented cold winter without injury, is very commendable. It shows an honest purpose on the part of the society to guard the people against the fraudulent transactions of certain tree brokers, tree dealers and tree peddlers who are trying to flood the State with such semi-hardy worthless varieties as the Mann apple, Alexander, Northern Spy and many others. It shows that the society, like Patrick Henry, is "willing to know the whole truth, to know the worst and to provide for it." Believing this to be the spirit and honest intent of the circular, I take my spade, pruning shears, microscope, etc., and go out to-day with the determination to probe to the root and heart of the whole subject. First I examine the foundation of my trees, because without live roots no plant can thrive; but thanks to an abundance of the beautiful snow our roots are all right. Next I take my pruning shears, and finding a branch that crosses and interferes with its neighbors I clip it out close down to the trunk of the tree, in order to get one, two and three year old wood. I cut up the different year's growths and put them under the microscope, also the fruit buds. This I do in all parts of the orchard, with the hardiest and tenderest sorts, and now I am prepared to answer questions.

1. "How has the past winter affected standard varieties of apples?" Answer—Like man, none are found absolutely perfect.

2. "What varieties, if any, have received no injury?" Answer—Every variety of the common apple and of crab apple are more or less discolored.

No. 3. "What varieties have sustained least injury?" Answer—Our friend R. L. Cotterell examined the Brett seedlings for us and sent us wood of the past year's growth of each, and judging from this would suppose they were all among the very best, but cannot speak positively in regard to them, as we have not seen the older wood. The next varieties which received but slight discoloration were the Russian Green, Lieby, Enormous, Tetofsky Type, McMahan White, Sweet Jennette, Giant Swaar,

Autumn Streaked, Revel Pear, Duchess, Tetofsky, Wealthy, Rollins Pippin, Elgin Beauty, Rollins Russet, Longfield, Yellow Transparent, White Transparent, Green and Red Transparent, Philips' Sweet and Sour Seedlings, Wolf River and others.

4. "Describe the character of the injury." First, as a rule, the fruit buds are killed; second, much of the wood is so discolored by the extreme low temperature of the past winter that too large a proportion of it will be converted into heart wood.

5. "What is the condition of Russian varieties in your locality?" Answer—They average a trifle better than American sorts.

6. "Have you, or do you know of any that have withstood the past winter without injury?" Answer—No.

7. "What is the condition of Siberians and hybrids?" Answer—They have withstood the effects of the past severe winter better than all others, but none have escaped *some* discoloration.

8. "Have you, or do you know of any seedling, or unknown variety of apples, which has come through the winter unharmed, or which promises to be of value? If so, state section, township and range, age, locality, with description of fruit, etc." Answer—Were I obliged to answer the above by yes or no, I should say no; but I think, perhaps, the Hart apple comes as near filling the above bill of requirements as anything with which I am acquainted. It is supposed to be a seedling of the Talman Sweet, fertilized by the Duchess, and originated in the township of Dover, Olmsted County, Minnesota.

9. "State character of soil, exposure and what protection, if any to trees." Answer—Clay loam soil, high, northern exposure, and mostly surrounded by evergreens.

10. "What is the present condition of strawberries, raspberries, currants, blackberries, and grapes?" Answer—All O. K. and prospects for a good crop of fruit.

Providing the bark of a tree is alive, it is *truly wonderful* to see how small an amount of sap wood is actually necessary for its welfare and support. The idea that a "black-hearted" tree is *worthless* is about played out. I never had a stronger *abiding faith* in successful fruit culture in Minnesota than I have to-day, notwithstanding the fact that our trees will increase in heart wood this year more rapidly than ever before. We shall watch *hopefully* for the "survival of the fittest," grasp these with *confidence* and *thankfulness*, and proceed to astonish the croakers in the future as we have in the past, both at Phila-

delphia and New Orleans. *Faith*, accompanied by good works, in our pleasant vocation, will work wonders for the good of the State.

FROM PROF. J. L. BUDD, SECRETARY IOWA STATE
HORTICULTURAL SOCIETY.

AMES, IOWA, April, 1885.

On the dark colored soil of Iowa we have had the most trying tests of fruit yet known. Absolutely no wood is sound except of the Siberian and Russian sorts. Fameuse, Gros Pomice and even Wealthy are lowered in vitality, but the latter is quite as hardy as the coast sorts of the Russians. The interior varieties of the Russians are as perfect, and in many cases more perfect, than Duchess. I am specially pleased with the varieties of the interior parts of Russia, where dent corn ripens, say of Varenesh, Orel and Kursk. They are fully as hardy as Duchess and high in quality. I received a letter from an old settler at Lake Minnetonka that his Wealthy were killed. It was a very gloomy letter indeed.

FROM N. J. STUBBS.

LONG LAKE, MINN., April 24, 1885.

If my views in relation to fruit prospects are desired, as indicated by circular, I will gladly give them. My observations have been somewhat limited, but generally small fruits, such as strawberries, currants, and grapes have come out in splendid condition, and unless late frosts should catch them in their bloom we may expect a full crop. Raspberries that have been properly cultivated and trained the last summer are also in good condition. The Gregg for blackcaps are grown almost exclusively in this section, and have given very good satisfaction generally, especially where grown on sandy soil, it seems better adapted for this than clay or very black loam, and this is certainly a very valuable, large, and very late raspberry. For reds, the Turner and Cuthbert seem to be the varieties here; the former, I think, will bear off the palm as the ironclad raspberry, and it is a very good berry for home use. The Cuthbert is only about one-half hardy, will not be a success without winter protection. But on account of its large and delicious scarlet berries, and its long seasons of fruiting, ordinarily running through six weeks or till

first of September, it will be planted more or less and pay well for the extra care or work of covering with soil.

But as to apple trees I think it impossible for anyone yet to fully determine the full extent of damage done them the past winter. But I must say there is no variety of standard, hybrid or crab that I have examined but what the wood is very dark. Of the crabs I think the Whitney No. 20 has come out best, and is really the best crab yet produced, and of the two standard varieties the Duchess are in the best condition. We cannot, under the present condition of things look for much of a fruit crop in the way of apples this year. I have noticed orchards that were located on northern exposure or slope are damaged the least; and trees that were heavily mulched and not cultivated are less colored, facts going to prove that the greatest damage done to fruit trees is usually caused by the sap rising late in the autumn and the weather turning suddenly cold, when with so much moisture in the cells of the wood it bursts them. This is no theory of my own, but is a fact proved by scientific experience; hence we need not be seriously discouraged if our loss is serious, for we can the better meet those conditions in the future, that are so destructive to fruit trees and ward them off. We have no Russian varieties in this vicinity that I have examined; hence I could not state in regard to their condition generally. I do not know of any seedlings of promise, but what are seriously affected in this town.

FROM E. DE BELL, SIOUX FALLS, DAKOTA.

Under date of April 14th, Mr. De Bell, president of the Dakota Horticultural Society, writes: "The wood of the Antonooka apple is in perfect condition; not colored in the least. Salome very badly colored.

FROM C. H. HOFFNER.

LITCHFIELD, MINN., April 26, 1885.

Your kind favor received and noted. I am very busy now, delivering, consequently cannot make a full report. Transcendant, Hyslop, Minnesota, Stewart's seedling, and Duchess came through all right; but the Wealthy and a few other varieties are more or less damaged.

This has been the hardest winter I have ever known since I

have been in the State. Small fruits are all right. My black walnuts came through O. K., although they made a vigorous growth and were unprotected. Am sorry I cannot make out a full report, but I will join your society soon and lend all the aid I can to such a society, in my weak way.

FROM J. C. KRAMER, OF LA CRESCENT.

Apples have had a severe winter. What trees the frost did not kill the mice have gnawed. Have lost eighteen healthy, thrifty trees, mostly seedlings and Duchess in bearing order; some about six inches in diameter. Mr. Brown, here, had all his grapes destroyed by mice. Duchess apple the best with me, and least injured. Generally trees killed back two or three years' growth, and the joints appear to be turning black. I do not look for a crop this year. Have some seedlings not in the least injured, some of them have not fruited yet; will send you samples of the best. My locality is sheltered from the east, and some of my trees are twenty-one years old. One seedling, which I think entirely hardy, has been injured some by the whiffletrees in plowing, and it may not live much longer. Last year's growth about one-third killed back. Situated in section nine, La Crescent township. Soil sandy clay, east slope.

Strawberries are in good condition so far. Raspberries are frozen badly. Currants are in good condition. Blackberries: The Snyder is frozen to the ground. Grapes: Those that were laid down are healthy; the softer sorts are hurt badly. Think the Concord will come out all right. About half of last year's growth injured.

I have about a dozen seedling trees of a variety that I have in orchard twenty-one years of age, and from which I have had eleven crops; has taken several premiums; tree slightly hurt.

FROM H. G. GROAT, ANOKA.

Small fruit looking well, considering the severe winter. The Turner raspberry alive to the tips; lost Ruby, Clark, and Black-caps—frozen down to the snow line. Strawberries are all right where heavily mulched; those that were uncovered were all frozen more or less.

FROM W. GOLDIN.

PLAINVIEW, April 8, 1885.

Apples — Wealthy uninjured; Russians come out very fine; Tetofsky sound; Duchess injured some on tips of last year's growth. Of crab varieties I have Transcendent, Orange, Hyslop, Minnesota, Whitney No. 20, Strawberry, and some dwarfs, — names not known; all came out sound. Am well protected by large forest on the north and west. Have examined some other orchards, and find them considerably hurt where exposed. Mr. J. Hessing's orchard, which was much exposed, Wealthy and Duchess, all last years' growth dead except some trees on old sod, which are uninjured. The bodies appear sound. Noticed the limbs on Gen. Grant were hurt. A few trees — names I don't recollect — were sound. This orchard contains about one hundred trees, but think the most of them will look "sorry" the coming season; they were all in bearing. He also has a large vineyard for this county, but most of them are yet covered. What we examined are fine; also his strawberries. I have of raspberries Cuthbert, Superb, Turner, Clark, Reliance, and Herstine (red), all in fine condition; Yellow Florence hurt badly; Dayton, Orange, killed to the ground; Davidson's Thornless (black) dead; Doolittles badly hurt; Gregg hurt somewhat. Of blackberries have Taylor, Wallace, and Lawton; all dead to snow line. Have had peach trees, but with the best protection I could give them they have now yielded to the inevitable; have had them some three years, but last winter "blocked" my wheel. Pears all dead; quinces dead; currants in good condition, and strawberries all look very fine. My grapes, I think, will come through fine. Fruit prospect for apples is poor. Some fruit buds, but that does not insure fruit on trees. Small fruit prospect good. We are in township 108, range 11, south-east quarter of section 35; Hessing, on section 36; soil, clay, covered with some black mould. Do not know of any unknown variety that is sound near here; there is one tree of some promise, but the ends of limbs are hurt. Should present prospects change I will report. Think it well to delay printing the book until we can see full results from the severity of the past winter.

FROM A. G. TUTTLE.

BARABOO, WIS.

Mr. Tuttle writes of the Russian varieties of apples in his orchard and nursery that they are "O. K. in bud and twig; Russian cions bright; on Duchess nearly all first buds killed."

Mr. Tuttle says: "I shall not be able to give you any report on cranberries. I am not as well posted as my son who has for several years lived upon the marsh and made thorough improvements; I hoped he would send you a paper for your report."

By permission of Mr. Tuttle we clip the following from *Farm, Stock and Home*.

FRUITS AND THE PAST WINTER.

BY A. G. TUTTLE.

Thinking you might be glad to hear from Wisconsin as to the condition in which the past very severe winter has left us, I have made an examination of the various fruits. I find a show of more injury than I have ever seen at this season of the year. The fruit buds of all the common apples, except Wealthy, Duchess, and Tetofsky, are mostly destroyed, and the inner bark of the terminal growth more or less colored. I made a thorough examination of one of my Russian orchards, comprising eighty varieties of new Russian apples, and found the fruit buds uninjured and all the wood growth in perfect condition.

I have three hundred Duchess in orchard, making a magnificent show. Fruit wood growth and fruit buds all right. Had we needed any further evidence of the extreme hardiness of Russian apples, their condition after such a winter, as compared with other apples, ought to satisfy anyone.

I find most of the roses, well covered with hay and also with snow, dead to the ground; something I have never known before, even after our coldest winters.

Raspberries generally destroyed. Blackberries badly used up above the snow line. Ancient Briton proving hardier (as it did the winter previous) than Snyder or Stone's Hardy.

The prospect for cranberries is most excellent. The vines are in good condition, having been covered with water and snow through all the severe cold weather of winter. A very large crop is looked for.

I think nursery trees of any but the very hardiest varieties may be unsafe to transplant, for while they do not show sufficient injury to prevent their growth if not transplanted, the check from transplanting, in addition to the injury by the winter, might be fatal to them.

I am sure that from the trial now making with new apples, we shall soon have varieties suited to all seasons adapted to Wisconsin and Minnesota, that will make apple growing in these states as certain and profitable as in any portion of the country.

On the whole, these test winters, as they must come, are not wholly pregnant with evil for the fruit interest of the Northwest. Each one should stimulate to new exertion, and carry us forward to what I am confident we shall ultimately attain—complete success.

FROM EMIL J. CLAUSSEN.

BISMARCK, D. T., March 28, 1885.

My trees are all Russians from Prof. Budd, two to three years old. This is their first winter up here. Being my first experience with fruit trees, I cannot give definite information, but there is apparently very little damage to Russian varieties. Soil clay loam, east slope; cornstalks left standing among trees; also a small mound of earth. Will report further next winter and try to be at your annual meeting.

Mr. Claussen sends the following additional report.

BISMARCK, D. T., April 20, 1885.

As a further report on Russian apple trees, I would say: The Antonooka seems to have stood the winter test the best of any one variety. The Longfield I am inclined to think will be first-class when we get it grafted on an extra early maturing stock; some of its shoots did not form terminal buds. The summer behavior of all seems perfect, although planted after most of them had started. The Russian White Poplar of the several varieties I have, seems perfectly adapted to this climate and longitude, where the cottonwood is a failure on the bench lands.

FROM E. H. S. DARTT.

OWATONNA, MINN., April 25, 1885.

I regard it too early in the season to determine, even approximately, the extent of injury trees have received. I expect they will continue to die for a year or two from effects of extreme cold of past winter. I answer your questions briefly.

First — Seriously.

Second — All injured more or less.

Third — Russians.

Fourth — A blackening of wood from a point eight to ten inches from the ground upward. This point was apparently the snow line at the time of the coldest weather, December 25th. The line is very distinct, one-half inch changing from perfectly sound wood below to the apparently dead wood above. In some varieties, notably the Duchess and Tetofsky, the dividing line between the bark and wood remains distinct, the bark appearing healthy. I think most of these will live, while in some other varieties the blackening of wood seems to extend into the inner bark, and I look for many of these to die during the season.

Fifth — Apparently fair.

Sixth — No.

Seventh — Mostly in apparently good condition. Some are badly injured.

Eighth — No.

Ninth — A great many varieties of soils and aspects. No protection except by wind breaks.

Tenth — All right as far as I know. I regard the prospect favorable for a good crop of fruit.

FROM J. W. POOLE.

EUREKA, DAKOTA Co., Minn., April 27, 1885.

I find the past winter has proven one of the severest we have had for years on apple trees; from the present appearance nearly all of the hybrids are somewhat affected. Even on the Wealthy the wood is badly colored on last year's growth; Duchess damaged some; the Orange crab seems to stand the test the best of any in my orchard. Stone's Hardy blackberry are killed down past the snow line nearly to the ground, and I have my doubts if they will prove worth bothering with. In central Minnesota, from the present appearances, a fair crop of raspberries will be real-

ized from the Turner, Philadelphia, Cuthbert, Caroline, Florence and Doolittle; the Gregg and Mommoth cluster is killed nearly to the ground. The Russian Mulberry here are alive nearly to the top. The prospect for strawberries here is good for a crop.

FROM ANDREW PETERSON.

WACONIA, April 27, 1885.

My trees are injured more or less. The standard varieties—Duchess and Wealthy—the wood of last year's growth is damaged a good deal; when I cut into it, it has a light brown color, and part of the buds are dead. I have split the fruit buds and examined a good many; some of the inner part of the buds are fresh yet, and perhaps they will bring fruit yet. I have five or six varieties of Russians that the fruit buds are not injured at all, but the last year's growth of the wood is a very little colored; so slight it can hardly be seen. I have another Russian tree that is not damaged at all. There are half a dozen other varieties of Russians that were just as much damaged as the Wealthy and Duchess.

The soil in my orchard is black, mixed with sand, and lays on a clay bottom. I have no kind of protection for trees.

The strawberries and currants are all right. Part of the raspberries are injured some.

FROM M. J. HOAG.

ROCHESTER, MINN., May 3, 1885.

In my judgment the past winter will prove to be the most disastrous to fruit trees, particularly the apple, that has ever visited our State. It is yet too early to determine just to what extent the damage may be, but from present indications the outlook for the apple interest of Minnesota, is anything but promising in this locality.

The following standard varieties, Wealthy, Duchess, Haas, Peach, and Tetofsky—and among the hybrids, Transcendent, Hyslop, Orange, Power's, on my grounds, passed the memorable winter of 1872-3 unscathed; while to-day these varieties show badly discolored wood, particularly the Wealthy and Haas. I have one hundred and sixty trees of the latter variety in orchard just ready to yield a liberal return for years of outlay, that to-

day reveal no signs of future usefulness, but are simply "cumberers of the ground." The Wealthy, Duchess, and Peach are a shade better. I find the least discolored wood in the Early Strawberry, a variety, by the way, of the hybrids, having but few equals as a dessert apple in this country. From this variety am hopeful of a fair crop of fruit.

The Turner raspberry comes out of winter quarters without a blemish—never looked better. Brandywine and Philadelphia in good condition. Blackcaps: Ohio, Tyler, and Lonegan in splendid condition. Am hoping for a bountiful crop of raspberries.

Grapes, if protected, are all right, and the unprotected ones are all wrong.

Strawberries, in appearance, are all that can be desired, and, barring untimely frosts, or droughts, we are sure of a fair crop.

Currants ditto.

With all my misgivings with reference to apples, I am still hopeful that time and favorable conditions may yet find deliverance for our precious varieties of the apple, that just now seem to be in so much danger. The Russian varieties that are being introduced in Minnesota will, I think, in due time solve the problem of apple raising in our State.

FROM SIDNEY CORP.

HAMMOND, Minn., May 5, 1885.

My trees have gone through the winter all right; did not lose a tree by winter killing. When your first letter came, I examined my trees and found the wood some colored, and buds in a condition too backward for me to be able to state correctly; but now I find the wood all right and a prospect of a good bloom with exception of a few very tender sorts. I have but three of the Russian varieties in bearing; they are all right, they are the Yellow Anis, Autumn Streaked and a white Russian apple name not known, of the Tetofsky type, but far superior in tree, and equal in fruit. The Autumn Streaked is one of the very best summer apples that I have ever raised; the Anis is under size.

FROM F. G. GOULD.

EXCELSIOR, MINN., May 5, 1885.

I have observed the condition of fruit trees and plants to some extent in this neighborhood this spring. It is too early at this

date to be altogether accurate in our conclusions; but I think the condition of trees and plants indicate the severest winter for years, if ever before. What are known here in Minnesota as standard apple trees are killed or badly damaged, except Duchess, Wealthy, and some of the Russians, and the latter show more or less injury. Those showing the least injury I will designate as belonging to the Hiberna or Liberty family. These latter, so far as can be seen, show but very slight injury, really appearing at better advantage than Transcendent crab, which carries some marks of the severe conflict of the winter of 1884-5.

The snow fell in good season last fall; not in large quantity, but enough to cover the ground sufficiently to give proper protection to the roots of trees and all plants which require protection by covering, including strawberries and grapes. If all other conditions are favorable, good crops of these may be expected, though it may be safe to say that the leaf roller on the strawberry plant, which appeared last year, may be looked for in greater numbers the present season. I find blackberries are badly damaged. The Turner raspberry is generally looking well. Currants and gooseberries promise a good yield.

The crab apple trees, Duchess and Wealthy begin to show blossom buds, and we may expect some fruit from them; also the Russians, which are with me but few in number at present.

FROM SETH W. KENNEY.

MORRISTOWN, RICE COUNTY, MINN., May 6, 1885.

Yours of April 30th is at hand with regard to amber cane prospects. The present prices of sugar are the lowest ever known. This has a corresponding effect on amber cane products, so that in twenty-six years the prices never have been as low as now. I have several thousand gallons of syrup on hand, and the wholesale prices in Minneapolis and St. Paul for best refined is only thirty-five cents per gallon, *delivered*. This reduces the profits below some other branches of farming. I propose to sell my surplus syrup and not *produce any cane* till another year.

The present prices will not warrant the large expense of a crop of cane which requires a large cash outlay of at least \$2,000. I shall plant corn, believing it will pay *better* than syrup at present prices.

I am selling my syrup in a small way at forty-five to fifty cents, and can probably work the present stock off at that price before a year from now.

FROM C. E. SHANNON.

GRANITE FALLS, MINN., May 8, 1885.

Your letter of the second instant inquiring as to the effect of the past winter on fruit in this section was duly received. In reply will say that I see no bad effect yet on apples. They seem to be starting as usual from the terminal buds and promise to bloom freely. Strawberries, however, have not fared as well. We had no snow in this section this winter and a few days of very high wind, which in many instances blew off the covering and I hear complaints from a good many places that the plants seem to be dead. Later developments may show that apples have sustained injury, but I see no evidence of it yet. All other small fruits seem to have come through the winter in good shape.

FROM M. PEARCE.

LAKESIDE NURSERY AND ORCHARD,

MINNETONKA, May 9, 1885.

The past winter has been the severest on fruit trees that we have had for twelve years. To what extent the trees are injured at present I am not able to determine; but from careful examinations made of various soils and locations I find a marked difference. On high ground, with clay soil, trees are injured the least. Of the varieties usually planted, that stood the winter best, are Beach's Sweet, Giant Swaar, Kimball, Whitney No. 20, Duchess, Wealthy, and Orange; and it affords me great pleasure to state (as hard as the winter has been) that I have one Russian variety that is as rapid a grower as the Transcendent; fruit large, and a good quality; keeps as long as the Wealthy. It came out in perfect condition this spring. I cut cions from it and grafted this spring, and they are all growing. When this and other good Russian varieties are propagated and planted over the State, I am confident we will have iron-clads that will stand, without injury, any Minnesota winter. I say to every fruit grower, keep your courage up. The past winter has demonstrated beyond all doubt what will stand through all winters, let them be hot or cold. Growing trees and fruit is the business of my life; have labored faithfully and hard, and I am not discouraged; I see a bright prospect in the future for Minnesota. It is my desire to go on record as one that assisted in bringing

out varieties of apples that will be a blessing to the people of Minnesota. My orchard of 4,000 Wealthy apple trees are not dead. The most of them will recover. My nursery trees are injured but little if any. The wood is white, and they are coming to the last bud.

Turner raspberry not injured; Cuthbert and Gregg badly injured; currants in good condition; grapes wintered well; strawberries never looked better.

FROM FRED VON BAUMBACH.

ALEXANDRIA, DOUGLAS COUNTY, May 11, 1885.

I have about thirty varieties of Russian apples in orchard, the most of them obtained from Prof. Budd, of Iowa, two years ago, and the balance of last year's planting. I find on examination that about two-thirds of my trees wintered first rate and show no material injury either in wood or bud. This condition indicates very plainly, I think, that we shall have no difficulty in raising an abundance of apples in Northern Minnesota, of the hardiest Russian varieties. My trees had no protection, except from boards placed on southeast side of trees to prevent sunburn, and natural groves surrounding orchard. Have not succeeded well thus far with the Wealthy.

Have some fifty grape vines in splendid condition, especially Janesville; vines were well covered during past winter.

FROM OREGON.

A correspondent, writing from Northern Oregon, under date of April 8th, says: "This is an excellent climate for fruit raising. A great many do not turn their attention to its cultivation except for their own use, as the product thus far has not been found very profitable. Apples, pears, plums, of many varieties, prunes, cherries, grapes, and all the small fruits can be raised in abundance. Peaches, apricots, and quinces are raised to some extent. Last fall many bushels of apples were left on the trees ungathered as farmers did not care to gather them when they were only worth from twenty-five to fifty cents per bushel. The fruit here grows very large and is of fine flavor, much better than that of California. Berries seem to contain more acid than those raised in the Eastern states."

HORTICULTURAL EXHIBIT AT NEW ORLEANS EXPOSITION.

REPORT OF THE SUPERINTENDENT, F. G. GOULD.

EXCELSIOR, MINN., May, 1885.

We began to make collections of fruits in the month of June, 1884. The small fruits, including strawberries, raspberries, blackberries, gooseberries, highbush cranberries, black cherries, and blueberries were preserved in solutions, in white jars. Plums, tomatoes, some of the early apples, and a collection of eight or ten varieties of grapes were exhibited in these jars; there were over one hundred jars, the sizes running from one pint to one gallon.

I started for New Orleans with this fruit on the evening of the nineteenth of November; arrived at Chicago on the evening of the twenty-second. I decided to try to hold my car there until the balance of the train came up, as the car was jerked and thumped by switching in with mixed way freight cars. We started from Chicago on the twenty-ninth and arrived at Cairo, where we had our car iced, on the thirtieth, and arrived at New Orleans on the second of December. The fruit remained in the car until the twelfth day of January. We kept ice in the car most of the time after its arrival at New Orleans until the fourth of January, after which the fruit was subject to the prevailing temperature of that exceedingly variable climate.

On the thirteenth of January the structure upon which our fruit was to be exhibited in the Government and States Building was so nearly completed that we began setting up the fruit; nearly a week was consumed in its preparation and arrangement. On the fourteenth day of January we took samples of our grapes to Horticultural Hall, as this was the place where the competitive exhibition of fruits was to be made. Our grapes had ripened and were cut from the vines three and some of them three and a half months previous to this date. Great care had been exercised in handling, wrapping, packing, and repacking the grapes, both before and after their arrival at New Orleans. We made fifteen entries for prizes in the name of the Minnesota State Horticultural Society. The following awards were made on our grapes.

Best collection, ten varieties, silver medal.....	\$25 00
Best collection, five varieties for table, silver medal.....	15 00
Best collection, five varieties for wine, silver medal.....	15 00
Best plate Brighton.....	5 00
Best plate Concord.....	5 00
Best plate Catawba.....	5 00
Best plate Delaware.....	5 00
Best plate Iona.....	5 00
Best plate Lindley.....	5 00
Best plate Massasoit.....	5 00
Best plate Wilder.....	5 00

No other state or territory received any awards of medals on grapes except California. The best thing of all, as I regard it, is our victory over the Catawba grape-growing district of Ohio. About twenty-five pounds of their Catawbas were brought there in splendid condition and entered for competition. They were very good grapes, but Minnesota exhibited better ones and hence received the award for best Catawbas.

Our display consisted of sixty plates, of eleven varieties, set up in fifteen different competitive combinations for prizes. We had already lost several varieties on account of the difficulty of keeping them sound so long after they were harvested, although most of the varieties which we exhibited were nearly perfect in appearance when set up, and were conspicuous as being the largest grape display in the building. The fact that Minnesota should attempt anything of the kind was a surprise to all of the people. All sorts of things were said about us; some could not believe our grapes were grown in the open air; there was some hocus-pocus about it; others that they could have "beaten" us if they had succeeded in keeping theirs "in condition;" and many other criticisms, usually in a friendly spirit. But the remark that two requisites were necessary seems to cover the ground; namely, to have some very superior grapes and to be able to place them on exhibit in good condition, as late as on the fourteenth day of January, over ninety days after they were gathered from the vines. This we succeeded in doing; and duty compels me to say that Mrs. Gould contributed largely toward this success by her good judgment and personal care of this fruit at times when it was not possible for me to attend to it.

Our grapes remained on exhibition in Horticultural Hall until the twentieth of February, and, strange as it may seem, were so well preserved at that late date as to be considered ornamental and attractive.

The names of contributors of grapes are A. Bonjour, A. W. Latham, Rev. C. B. Sheldon, and F. G. Gould, all of Excelsior, Hennepin county.

The sixteen kinds of fruit jellies, prepared and donated by Helen M. Gould, were put up in one hundred goblets, or wine-glasses, representing sixteen shades, running from a light amber to a deep purple, and so perfectly clear that the interested lady visitors could not resist the temptation to tip the glasses (carefully, of course), expecting it to flow like wine. We had over one hundred bushels of Wealthy apples alone, and between five and six hundred pounds of grapes. The weight of our fruit exhibit, including packages, when loaded on a car at Minneapolis, was four and a half tons.

Our apples never went to Horticultural Hall for competition, with the exception of a few single plates, which did not exceed a peck in quantity. These included Duchess and Wealthy. Each received the prize for best plate of the variety.

By direction of the commissioner of Minnesota our principal display of fruits was made in the government and states building, with the collective exhibits from the State. The structure upon which the fruit was displayed was about forty feet long and seven feet wide, divided into five sections, raised two steps, making one central, two intermediate, and two end sections. Upon the central section two wire structures were placed back to back. These were constructed with two pockets, or baskets, one above the other, the upper one being six feet above the table. About six bushels of apples were placed in these two wire structures. Twelve wire globes, standing thirty inches high, on stems or bases of wire, holding something over a half bushel each, were filled with apples and placed on the corners of the end and central sections. The glass jars were ranged along the steps, about on a level with the eye, all along the structure, except the easterly section, upon three faces of which the jellies were displayed. Plates of apples occupied the most of the first or lower step of the table, and among the globes on the higher portion, cranberries were shown in numerous glass fruit dishes.

A section of cranberry marsh two and one-half by three feet, with nice fruit on the vines, was placed in a zinc tank here in Minnesota and shipped to New Orleans in perfect condition. A mirror on the back, under the cover, gave the appearance of double the actual size of the swamp, the latter being in a box under a glass cover at the end of the table. Some of the vines

had grown as much as three inches on the first of March. This green swamp not only suggested to every Minnesotian a thought of his own country, but was attractive and interesting to strangers; probably not one visitor in a thousand ever suspected that the swamp was of the actual dimensions given.

We started into this work with the determination to make the exhibit creditable to our State, my wife assisting me from the start, without charge to the State, devoting our first attention to the various details and accumulating responsibilities, connected with the preparation, storage, and care of the fruit. How well we succeeded in discharging the duties of the trust confided to our care, comparatively few of the citizens of our State had an opportunity to judge, from an inspection of the fruit display at New Orleans; and, to afford all others a better opportunity to judge than by anything we might say, we have appended some of the opinions of others, the most of whom are entire strangers to us. In conclusion I desire to thank all who contributed in any way to our exhibit.

The names of those who contributed fruit will be found with the list of fruits. Among others who rendered valuable assistance I will mention the names of Mr. Geo. S. Woolsey, of Minneapolis, who helped me at New Orleans in getting our grapes to Horticultural Hall for competitive exhibition. I also wish to acknowledge kindly advice and aid from Mr. Geo. A. Brackett, Col. Samuel E. Adams, Mr. H. A. Gale, Prof. N. H. Winchell, Col. Harbaugh, and others; also, to Mr. A. W. Sias, of Rochester, and Mr. O. M. Lord, of Minnesota City, for valuable aid in collecting and forwarding the best fruits of their neighborhoods; and, lastly, to Gov. L. F. Hubbard be the credit of rendering such assistance as made it possible for us to bring our exhibit up to the greatest point of excellence during the month of February when the largest number of visitors were in attendance at the exposition.

WHERE THE FRUIT CAME FROM.

Wealthy apples, Duchess, donated by Geo. H. Klos, Carver; Hyslop, donated by Mrs. M. S. Gould, Excelsior; Seedlings No. 5, No. 1, No. 2, Wealthy, donated by August Krouse, Waconia; Wealthy, donated by Wm. Sarver, Excelsior; two bushels Wealthy, donated by F. G. Gould, Excelsior; from Andrew Peterson, Waconia, Wealthy, Hibernial, Astrakoff, Glass, Lieby,

Charlamoff, Sweitzer, Imperial, Winter Pear, Minnesota, White Astrachan, Winsted, Pippin; from Geo. W. Clark, Winona, Golden Russet, Perry Russet, Hyslop, Utter's Red, Ben Davis; from F. S. Shanley, Howard Lake, Aiken's Striped Winter, donated; from Wm. Bardwell, Excelsior, Hyslop, Excelsior Plums, donated; from J. T. Grimes, Minneapolis, Hyslops, donated; from Rev. C. B. Sheldon, Excelsior, Catawba grapes; from A. D. Leach, Excelsior, cranberries; from A. Bonjour, Excelsior, grapes: Iona, Merimac, Salem, Massasoit, Lindley, Delaware, Wilder; apples: Wealthy, donated; from Mrs. Anna B. Underwood, Lake City, Desota plums, donated; from D. Q. Burley, Minnesota City, Perry Russet, Hyslop, Utter's Red, Walbridge and fourteen sorts of seedlings; from G. Whetstone, Minnesota City, five sorts seedlings, English Russet, Haas, Utter's Red; from E. B. Jordan, Rochester, Wealthy, Pewaukee, Melinda, Rollins Russet, Longfellow, quart blackberries; from N. C. Stubbs, Long Lake, raspberries, Gregg and Cuthbert, Smith gooseberries, donated; from Miss Helen M. Gould, Excelsior, one hundred glasses fruit jelly, sixteen sorts; from A. W. Latham, Excelsior, grapes: Cottage, Lady, Lindley, (Rogers No. 9), Massasoit, (Rogers No. 3.), Brighton, Telegraph, Perkins, Worden, North Carolina, Black Hawk, Delaware, Concord; apples: Wealthy, Lieby, Swan; from F. G. Gould, Excelsior, grapes, Concord, Delaware, Martha, Iona, Janesville, Worden, donated; from O. C. Tucker, Winona, Fameuse; from Mrs. Anna B. Underwood, Lake City, Wealthy; from B. Taylor, Forestville, Wealthy and Ox apples, donated; from William Morse, Excelsior, Hyslop; From Wm. McHenry, St. Charles, Golden Russet, Roxbury Russet, Wealthy, Spice Sour, McMahon White, Wabasha, Wabasha Pear, Elgin Beauty, Duchess, Burley, donated; from E. S. Bardwell, Excelsior, Duchess, donated; from O. M. Lord, Minnesota City, seedling apple, and Rollingstone plum, donated; from P. M. Gideon, Excelsior, seventeen sorts apples, and two of peaches, donated; from Charles Ludluff, Carver, sixteen sorts of apples, donated; from Mr. Miller, Dodge Centre, seedling apple, donated; from Andrew Peterson, Waconia, peck butternuts, donated; from Eli Stone, Excelsior, Wealthy, donated; from J. J. Cale, Northome, Wealthy; from Albert D. Cook, Anoka, two quarts hazel nuts, also Clinton grapes, donated; from Mrs. F. G. Gould, Excelsior, six jars raspberries, two jars Snyder blackberries, Martha and Iona grapes, donated; from J. S. Harris, La Crescent,

hickory nuts, apples, Alaska, No Name, Plum Cider, Talman Sweet, Walbridge, Willow Twig, name lost, Mother, Deomin, Bailey Sweet, Seek No Further, Utter, donated.

COLLECTED BY A. W. SIAS, FROM

Wm. Somerville, Viola, Rollins Pippin, Prolific, Rollins Russet, Wabasha, Melinda, Charlamoff, Haas, Fameuse, New York Pippin, Gideon No. 6, donated; J. Q. Richardson, Elgin, Melinda, Rollins Russet, donated; J. W. Hart, Dover, new seedlings, Hart, May, Brett, Hyslop, donated; Frank Whiton, Viola-Elgin Beauty, Red Saxton, St. Lawrence, donated; Sidney Corp, Hammond, McMahon White, Autumn Streaked, seedlings, donated; M. Kepner, fine winter apple, unknown, donated; T. E. Richardson, Elgin, Green Oak, Yellow Oak, Red Oak, donated; L. H. Golding, Viola, Seedling No. 1, Seedling No. 2, Seedling No. 3, donated; Wm. Forster, Chatfield, Forster's Red Winter, Forster's Sweet, donated; M. W. Cook, Rochester, Russian, unknown, donated; Rev. Charles Woodward, Rochester, Gen. Grant, donated; Wm. Brown, Rochester, Utter's Red, donated; Robert Waldron, Rochester, Seedling No. 1, Seedling No. 2, donated; A. W. Sias, Rochester, Russians, Winter Lowland, Red Black, Leipzig Borsdorf, Yellow Anisette, Red Anisette.

Jars in solution, A. W. Sias, Red Anis, Rollins Hybrid, Yellow Anis, Rose Plum; Sidney Corp, Autumn Streaked, W. O. Crittenden, Smelling apple; I. W. Rollins, Heidorn's Streaked; Wm. Forster, White Astrachan; R. L. Cotterell, Haas, Fameuse, Cotterell Plum; Mrs. A. M. Brown, hybrids; Samuel Wheeler, Orangeleaf; Wm. Forster, seedling; Mr. Hanks, Wild Plum; Chas. Woodward, J. Virginiana; E. D. Sias, Black Haw, V. Prunifolium.

CANNED FRUIT, COLLECTED BY F. G. GOULD.

Duchess, Mrs. J. Seckler, Excelsior, donated; Glendale Strawberry, M. W. Cook, Rochester, donated; blueberries, wild, from Anoka county; Lowell's Excelsior plum, Wm. Bardwell, Excelsior, donated; Bender plum, Mr. Bender, Chanhassen, donated; peaches, P. M. Gideon, Excelsior; De Soto plum, J. M. Anderson, Lake City, donated; Duchowoe (Russian) and Yellow Sweet, E. H. S. Dartt, Owatonna, donated; Cuthbert raspberry and Gregg raspberries, N. J. Stubbs, Long Lake; wild blueberry,

from Mille Lacs county; grapes, A. D. Cook, Excelsior, donated; Miner plum, S. Bates, Stockton, donated; Rollingstone plum, O. M. Lord, Minnesota City, donated; plums, Mr. Bender, Chanhassen; plums, Wm. Bardwell, Excelsior, donated; black cherry, wild, F. G. Gould, Excelsior, donated; Russian apple, J. H. Moulton, Minneapolis; Smelling apple, W. O. Crittenden, Dover, donated; black cherry, L. G. Sampson, Excelsior, donated; wild black cherry, from Hennepin County; Charlamoff, Andrew Peterson, Waconia; gooseberries, N. J. Stubbs, Long Lake; tomatoes, two varieties, Mrs. A. J. Caswell, Coon Creek, donated; husk tomato, John Sampson, Excelsior; raspberry, Mrs. Young, Waseca, donated; Fameuse, tomato, William Roma, Minneapolis; Russian apples, Andrew Peterson, Waconia; Hybrids, Mrs. A. M. Brown, Plainview, donated.

CANNED GOODS, ETC., DONATED BY

F. G. Gould, Excelsior, Hyslop crabs, three jars, Whitney No. 20, Janesville grape, Brier's Sweet, two jars, Wealthy, tomatoes, two jars, raspberries, blackberries, two jars, Golden Cap raspberry, plums, two jars, Duchess, Turner raspberry, Delaware grapes, highbush cranberries, two jars, Wilson strawberries, four jars, Apricot plum, Lowell's Peach plum, Transcendent crab, two jars, Gem crab, Martha grape, three jars, Snyder blackberries, Philadelphia raspberry, Rogers No. 15 grape, Iona grape.

MINNESOTA AT THE WORLD'S FAIR.

WHAT THEY SAID ABOUT MINNESOTA'S EXHIBIT.

We have given a good deal of time to the Minnesota exhibit, and pronounce it as good as any of the states, especially the fruit. We are proud of it. The jellies are fine.

D. and E. J. BASSETT,

Feb. 21, 1885.

Minneapolis, Minn.

I think it the finest display I have seen.

MRS. E. P. BEEMAN,

Excelsior, Minn.

I think it the finest display in the building.

E. P. BEEMAN,

Feb. 14, 1885.

Excelsior, Minn.

Minnesota was remembered by its fine display of fruits, and their tasteful arrangement.

Feb. 16, 1885.

MARY BARNES,
Barry, Mo.

The fruit display is such that we, of the State of Minnesota, are surprised at the many varieties raised in our State, and that the same is so finely arranged.

Feb. 24, 1885.

G. W. BUSWELL,
H. P. COURTAES,
E. D. SOUTH,
Blue Earth City.
WM. COURTAES,
St. Paul.

Myself and boys vote this Minnesota fruit display rather the finest we have seen, and decidedly the jellies take the cake.

MRS. O. W. ROBERTSON,

Feb. 16, 1885.

Milwaukee, Wis.

Minnesota has a fine display of fruit and jellies very attractively arranged.

Feb. 16, 1885.

So say we—all of us.

MRS. WHIPPLE.
Q. A. WHIPPLE,
Rhode Island.

In passing through the Minnesota exhibits we could but stop to admire the exhibit of fruits, both fresh, canned, and jellied, arranged by the superintendent, F. G. Gould, and wife, from Excelsior. Some of the baskets holding the fruit were designed by Mr. G. especially for the purpose, and were beautiful. The display was excelled by none.

February, 1885.

MRS. T. J. TEMPLE,
Mexico, New York.

Minnesota, in her fruit exhibit, excels all ideas of the public as to her capacity in that line. The display is arranged with great taste, and from the adjacent spaces attracts universal attention. The lady in charge is kind, and ever ready to give information to visitors.

February, 1885.

ELIZA GREENWOOD,
New Orleans, La.

The Minnesota fruit is the best on the grounds.

MR. and MRS. H. C. GRAY,
Chicago, Ill.

It is with much delight we indorse the extreme excellence of Minnesota exhibits, especially fruit product.

Feb. 19, 1885.

A. and R. McDONALD,
Canada Pioneers.

The Minnesota fruit display is beautiful and artistic, reflecting much credit to the State and gentlemen who arranged it.

MISS MAUD ROCHESTER,
New Orleans, La.

The best display in the hall. MRS. P. CARPENTER,
Barry, Mo.

Minnesota's fruit exhibit is in every sense elegant and the handsomest arranged I ever saw.

MRS. F. M. FREEMAN,
MRS. WYCHE,
Macon, Ga.

The fruit exhibit of Minnesota not to be excelled on the grounds. Hope the State authorities will keep the same replenished.

A. A MYERS,
Williamsburg, Ky.

Minnesota fruit exhibit is a surprise to us, as also many of her departments. The kindness of her lady exhibitor is fully appreciated by an Ohio sister.

Feb. 18, 1885. ALICE A. KOLLER,
Bloomville, Ohio.

The Minnesota exhibit of fruits, in charge of Mr. Gould, of Excelsior, is exceedingly attractive, and is much admired by visitors.

J. K. CLAGETT,
Hastings, Minn.

MR. and MRS. P. A. CLAGETT,
New Orleans, La.

The display of fruit of Minnesota is certainly very fine, and the arrangement reflects great credit upon those who arranged it. The fruit, as well as the courteous lady and gentleman in charge, is all that could be desired.

MRS. KYLE,
Brooklyn, N. Y.

The Minnesota exhibition of beautiful fruits is the finest in the grounds.

J. R. MCKINNEY,
Minneapolis, Minn.

The Minnesota fruit display is fine, and the variety is good. I think it deserves especial notice. Is second to none.

M. J. BURNS,
St. Jo, Mo.

Feb. 23, 1885.
The jelly is the finest I ever saw.

MRS. C. H. BRADSHAW,
New Orleans, La.

It is the clearest and most perfect jelly I ever saw in my life.

MISS L. BRADSHAW,
New Orleans, La.

After examining the many different displays of fruit, I think the one from Minnesota the finest, particularly the display of apples, and certainly the lady in charge of that department one of the most pleasant and accommodating among the many in the building. We will remember the Minnesota department with pleasure.

Feb. 23, 1885.

CLARA WILSON,
MARY PARIBLÉ,
Franklin, La.

The best exhibit of fruit in the building, and far excels the others in decoration.

Feb. 23, 1885.

BEATRICE DAVIS,
MRS. A. C. HARKEY,
MRS. A. L. BAILEY,
MISS WILLIE DAVIS,
Salado, Bell Co., Texas.

I am a resident of the State of Maryland, and one much interested in fruits of all kinds, and during my inspection of the products of the states at the exposition at New Orleans, among others, the fruit display of Minnesota pleases and deserves of me special mention. Though not so large in size, they are rich in variety. I heartily commend the fruit inspected, and speak from a personal knowledge of the flavor of the apple called the Wealthy.

Feb. 24, 1885.

J. T. EDWARDS,
Cumberland, Md.

The following is an extract from a letter written by Charles Hallock, and published in the *Pioneer Press* of March 4, 1885.

F. G. Gould's fruit display is still attractive, although decay has made sad inroads upon it. Notwithstanding the trying climate, it has been kept up a month longer than was expected. It is very artistic in its arrangement, and has elicited great praise even from most emulous competitors. There are (or were) one hundred varieties of apples shown. One of its most interesting features is a natural cranberry bog, with the fruit still on the vines. Southern people ask if they are cherries. There are one hundred glasses of jellies, very fine, of various fruits and flavors, donated by Miss Helen M. Gould, and so transparent that people mistake them for wines. There are cherries, plums, berries and various small fruits in jars. There are some jars of extra large strawberries, and some of clusters of grapes weighing a pound. This show took three medals and eight prizes on grapes, sharing the reward with California only, and beating Ohio on her famous Catawbas. Visitors and exhibitors are surprised to see what Minnesota can do in horticulture and fruit growing.

AMBER CANE AT NEW ORLEANS.

Seth W. Kenney, of Morristown, Minn., superintendent of amber cane products at New Orleans, writes, in March, to the Minneapolis *Tribune* as follows:

"It has been several years since I have furnished articles for the *Tribune* on the culture of the Minnesota early amber sugar cane, being obliged to give my refinery my undivided attention. I have just returned from the World's Exposition at New Orleans, where I have been engaged as superintendent, of amber cane products. It was proclaimed to all nations that Minnesota took the highest awards on amber cane products, on syrup one premium, and, for the best barrel of any grade exhibited, the sweepstakes premium. My position at New Orleans brought me in contact with the planters of the South, and with those that were well informed in regard to both Northern and Southern cane. From those men I learned many things that were new to me, and perhaps of interest to your readers. I learned from William Wakerman, Jr., of Oshkosh, Wisconsin, that all the hams and shoulders in their extensive pork packing establishment were pickled with amber cane syrup, and gave the best of satisfaction. Mr. John Dimond, vice-president of the sugar exchange, and a heavy planter, said he was much surprised at the excellence of the samples grown in Minnesota. He said that the Northern cane industry, so widely extended and already producing twice the amount of syrup produced by the Louisiana cane, must be an important factor in helping to protect the sugar industry. Mr. Dimond read a very valuable paper before the Farmers' Congress at New Orleans. He also took samples of the Minnesota product to the sugar exchange at New Orleans to show to the planters what was being done in Minnesota, and repeated what some of our best men have said, that we can produce sugar as cheap as they could, counting the value of the seed for feeding purposes. The testimony of the planters of Louisiana, as well as persons from almost every other state, as to the value of our products must make Minnesota an export State on her fine products. Among many orders for syrup was one for Stockton, Cal., for fifty gallons, with a view of supplying that city with Minnesota goods. This convinces me that with thorough organization and working to raise the grade, and with the same concert of action that our dairy people have, we can make an article that will not depend entirely on a home

market, but will bear transportation. It is only in such a place as the World's Exposition that we can learn the position that we, as a State, are entitled to. From conversation with others engaged in this industry I learn that Minnesota amber cane yields nearly double that of the Southern States and that the quality is the best. It is to be hoped that cane growers will keep a sharp lookout after this industry, which has been shown to be able to secure a commanding position in the markets of the world."

MINNESOTA.

The following address was delivered at New Orleans by Gen. J. H. Baker, and should be read and studied. It is a masterly and truthful statement of the vast resources of our grand State:

There is an aristocracy in nature, as among men—the loftier mountains, the grand old oceans, the greater planets—which challenges our admiration and commands our homage. So among rivers, there are great names like the Danube, the Nile, or the Ganges, the very mention of which fills the imagination and tells of empires washed by their waves. To-day we stand by the "Father of Waters," which God hath made the artery of a great continent. Young empires deck its shores as it meanders through nearly every zone which belts the globe. Bright intelligences with all the higher aspirations of life, with all the brighter forms of civilization, have come to people its shores, as if indeed "time's noblest offspring was the last." As this proud river flows onward in its march to the sea, it bears upon its bosom the bounties of nature and the productions of art for interchange between one state and another, thus forming a highway for common benefits and interest; a link creating ties and relations alike natural and reciprocal, the people so located can never feel indifferent to each other. One government, one policy, one interest, one prosperity is their probable destiny. A misfortune or a folly might prove the equal injury of all. If there were resentments let the waters of this river forever wash them away.

The Mississippi is our common inheritance. Its fountain is ours; its waves to the ocean are yours! Rising at the feet of the forest pines of Itasca, it pursues its way, now in wanton meandering, amid glens and rocks, again widening into picturesque lakes,

or foaming over cascades, gathering volume as it flows, it descends into the plain, irrigating a thousand meadows, or massing its waters for strength, plunges over rapids and falls, driving the wheels where the skill of man works out the polished products of civilization; at last gathering its great family of rills and rivers into one superb channel, mature, deep and strong, it bears upon its stately bosom the commerce of the West. It seems designed not alone for the drainage of empires, but for the uniting of the people on its shores into a single community of interests and destiny. Unlike as are the productions of its varied zones, this very diversity is a bond of union, for it substitutes inter-dependence for rivalry. Its social conditions, too, are not the least of its benefits. While we may fly from the protracted rigors of a northern winter, you, with reciprocal purpose, can leave the enervating summer's heat, and find the roses of health among some of the thousand lovely lakes that ornament our State.

Between the summits of the Alleghany mountains on the east, and the Rockies on the west; from the watershed of the continent at Itasca on the north to the great gulf on the south, covering twenty degrees of latitude and thirty of longitude, lies the mighty valley of the great river, a continent in itself. Unsurpassed in the variety of its soil and productions, it is the garden of nature. Superb in the noble character of its scenery from frost to flowers, it is in itself a poem. With the exception of the Amazon, no valley on the globe will compare in size with that of the Mississippi; and in its infinite resources and adaptation to the support and comfort of civilized man, it surpasses all others. Even the fabled Nile dwarfs in comparison with the opulence of this marvelous valley. It has more than doubled the productive power of the United States. It has given an opulence to the West which baffles competition. It steadily rises in the scale, and with fresh resources astonishes the world. It is the donative of a new and individual power to the republic, equal to a hemisphere in its incalculable abundance. Around this river cluster impressive memories, from the days when the intrepid Ferdinand de Soto discovered its waters, or a century later when Marquette beheld its sources, till the hour when this exposition opened its doors to receive the polished products of the civilized world.

Youngest of all the states which border this illustrious stream, Minnesota presents herself to you, her eldest sister. Within the memories of you here present our State has developed from barbaric solitudes into a well organized and equipped republic.

That we are here to-day with a collective exhibit of which any people might be proud, with but twenty-seven years of statehood behind us, is indeed a miracle of creation. We represent a million of kindred Anglo-Saxons, who upon the fertile lands of Minnesota, are working out the problems of American life. We exhibit to you the evidences of our activity, the witnesses of our resources.

Minnesota has sought to align herself with that universal spirit of progress which marks the last decades of the century. We trust that our works which are before you are expressive of the aims of an intelligent and growing people.

Let us examine some of the elemental factors upon which we base our claim to the confidence and regard of our competitive sisters. We invite the most critical examination into the condition of our commonwealth.

The agricultural resources of a people is one of the means by which we measure the importance of a state. The power to produce for consumption and a good round surplus is a wealth creating power. Here is a statement from the official ledger, revised for this occasion: We raised during the year 1884 or wheat, 44,307,000 bushels; of oats, 36,100,000 bushels; of corn, 25,630,000 bushels; of barley, 8,618,000 bushels; of potatoes, 7,000,000 bushels; of tame hay, 2,627,000 tons; of wild hay nearly 2,000,000 tons more. These figures illustrate our resources. The average of corn was thirty-seven bushels per acre. That we are a corn producing State is evidenced by the fact that the department at Washington, in the report for 1882, shows that Minnesota leads Iowa, Missouri, Wisconsin, Illinois, Indiana and Ohio in the per acre average of its corn crop.

Consider in this connection how little of the 54,000,000 of acres which comprise the total area of our State are yet under cultivation. About 8,000,000 only are improved, and, deducting our lacustrine regions, but one-fifth of our land is yet in use. About 100,000 farms are now equipped and in running order.

The grand cereal, wheat, has reached the meed of perfection in our State. That spring wheat should supercede winter wheat in the quality of its flour product is one of the surprises that Minnesota has given to the country. The plump, deep amber berry of our Fife spring wheat, richer in gluten than any other, has contributed a noble share in the prosperity of our State. The royal exhibit made at this exposition certifies to the perfection of the Minnesota Fife wheat. This great fact stimulated

its growth, and the grand result is shown in creating for Minneapolis and Duluth the largest aggregate of actual business in this cereal of any cities in America, New York alone excepted. Its milling properties are superior to all others, as it has given name and fame to the finest brands of flour in the markets of the world. The combined results of these great facts has been to give our State, in the city of Minneapolis, the greatest milling centre of the world. Twenty-seven establishments, with an aggregate capacity of 30,000 barrels of flour per day, is a superb and solid fact in commercial life. Minneapolis in eight days can grind enough flour to supply all the people of New Orleans for a year! A city that can make 6,000,000 barrels of flour in twelve months should be mentioned with respect at every breakfast table in Christendom. The total milling capacity of our State is about 60,000 barrels per day, and the total production in 1884, was about 8,800,000 barrels. In addition to this there was 250,000 tons of mill stuff worth \$2,250,000. The last milling year, Minneapolis alone sent 1,500,000 barrels of flour to Europe, and the rest of the State nearly 1,000,000 barrels more.

But it is the wise diversification of her crops and products that have recently accelerated our growth and development. We have fortunately reached that period when one interest no longer overshadows all others, but where each is the correlative of the whole, framing the beams and girders of a commonwealth, solid and self-sustaining. The exhausted era of wheat has given away to the era of diversification. No cereal is king, but corn, oats, flax, barley, rye and sorghum are new and powerful factors in our agricultural wealth. Above all, grass and the honest cow are at the fore. Our State is the fruitful mother of the most nutritious grasses. It is now fully demonstrated that timothy, clover and blue grass are as "to the manor born." Herds of noble cattle are everywhere to be seen. Stock raising and dairy farming, together with flocks of well bred sheep and well rounded hogs, ennoble the pastures of our progressive farmers.

We have herds of Shorthorns, Jerseys, Polled Angus, Herefords and Devons, which cannot be surpassed in the United States. Our ability to compete with the best butter makers of the world is demonstrated by the meritorious exhibit we have made at this exposition, where Minnesota captured twenty-one butter prizes, including the grand sweepstakes and gold medal. A lady of our state, Mrs. N. P. Kelly, has elevated butter into the realm of the fine arts. Her delicate touches and artistic finish

have moulded it into blooming flowers, with delicate tracery, as with the chisel of a Phidias. There are about one hundred creameries in operation, many of which are large establishments. The butter product of 1883 was about 22,000,000 pounds, and of cheese 750,000 pounds, yielding a sum of fully \$1,000,000.

The butter prizes taken at this exposition mark an era in the history of our State. They are but resulting incidents of great fundamental facts. There was no element of chance in these awards. They flow from certain prerequisite conditions—the quality of grasses, the purity of water, climatic conditions and skill in manufacture. Butter is now as scientifically tested as sugar. There can be no mistakes. In the taking of this sweepstakes premium our butter came in competition with the first premium butter in every class, including creamery, dairy, local and all others. The competition was abundant and severe. The judges were experts from all parts of the country, and satisfactory to all exhibitors. The packages examined were stripped of every mark of identification and the severest tests were applied. What we won we won upon merit. And it is here worthy of remark that the only other package claiming almost equal merit was also from Minnesota, presented by N. Olsen, of Spring Valley, and which lost the sweepstakes prize by only half a point. To W. H. Patten & Co., of Le Seuer, belongs the distinguished honor of receiving the grand sweepstakes prize, with a gold medal and \$150 in cash. The stimulus which this great result will give to a growing and noble industry in our State will alone amply compensate for all the money we have expended in this exposition. The total amount of dairy premiums awarded to Minnesota was \$1,589.50. In cheese we took four premiums, with only two factories represented.

The timber interests formed one of the earliest and most solid interests of our State. It employs millions of capital and thousands of men. It has built up parts of the northern portions of Minnesota with energetic and prosperous towns and villages. It has inspired the building of railroads. We have not less than two hundred and forty-five sawmills in the State, and many of these are among the largest in the world. Some idea of the extent of this industry can be had, when I state that in 1883 we cut more than one billion of feet, and very nearly the same in 1884. This does not include the enormous output in shingles and lath. The total value of this yield is put at \$17,000,000.

Nor is Minnesota wanting in true mineral wealth. She pos-

sesses on the north shore of Lake Superior a region of eruptive, igneous rocks, with tabular masses of trap, slates, granite, conglomerates, gneiss, and indeed the whole metamorphic family, wild in their grandeur. This is in strange contrast with the agricultural areas of the State. Here is one of the greatest iron deposits of the world. Hard, specular hematite, or the true Bessemer iron ore, is found in limitless quantities, breaking the trapean crust through ninety miles of territory, and to which already a line of railway has been constructed from the great lake, giving rise to new towns and new and substantial industries. Beyond this, there has recently been discovered veins of argenteriferous quartz, richer than that of Silver Islet, which, twenty years ago, gave a Monte Christo celebrity to a little rocky island off the shores of the great lake. It is also to be recounted that since last September as much as two entire townships of this metaphormic rock in this region have been entered by experts as gold bearing, and men and machinery are now at work opening mines, whose fabled wealth is as much a revelation to ourselves as to the world at large. Copper mining has recently begun in the same region with great promise. Mica, porphyry, plumbago and pyrites are abundant. Indeed, the whole north shore, once supposed to be the only worthless region of our State, now promises to be the richest, and this mineral region has special value by reason of proximity to Lake Superior, affording inexpensive transportation.

This summary of our resources would be incomplete without some reference to the wonderful stone formations and varied clays of the state. The beautiful stone shaft which lifts itself nearly forty feet in height before you, correctly represents the varied and consecutive stratas of the extended formation from which it was taken at the city of Mankato. The thickness of the strata, its ability to sustain pressure and withstand the corroding influence of the elements, the pink-tinted stone, in juxtaposition with it, at Kasota, so well calculated and celebrated for decorative work; but above all the marvelous deposit of hydraulic cement rock, west of Mankato, which is admitted by experts to be the most tenacious of any natural cement rock—these combined make this one of the most remarkable families of limestone known to the world. The manufacture of this cement is in full operation, and its approved merit is causing it to supplant even the artificial Portland. This, with the rich families of clays, such as the fire brick, porcelain clay, clay for tileing and pot-

tery, which are widely scattered over the State, complete a rare aggregate of permanent values. To these must be added the splendid granites of St. Cloud and sandstones of Duluth, with many and varied deposits of blue limestone, which complete the endowment of the State with a wealth of rock and clay equipment.

To make by labor and art the machinery, the cloth, the lumber and its products, to form, fashion and fit for our use the varied raw materials, is the highest mark of a self-reliant and thrifty people. This is the super-structure which, reared upon successful agriculture, builds the solid prosperity of a State. Our manufacturing power increased the past three years over one hundred per cent, and with abundant raw material, and the cheapest of motive powers, our manufacturing future is secure. Upon no equal area of territory has nature been so lavish in providing water powers. The aggregate of these waterfalls is beyond belief. Their individual force is such as to merit mention. St. Anthony Falls equals 135,000 horse power. Sauk Rapids, Pokegama, Little Falls, the rapids of the St. Croix and the Dalles of the St. Louis will each average 90,000. There are twenty-seven others well distributed and worthy of mention. This combined power would turn the wheels of the industries of the United States. They are incentives to the fabrication of all our raw material. We have not only the motive power, but abundance of cheap material to give these tremendous forces proper employment. They invite to enterprise, and are a wealth creating power.

In vegetable products we take a great pride and a position of just supremacy. It may appear an humble thing here to-day among these splendid works of art, pictures and statuary, silks and carving, to speak of potatoes, turnips, beans, cabbages, and peas. But good, sound table vegetables are mighty factors in the health and contentment of a people. They could subdue a hungry mob or give freshness and valor to an exhausted army. Not unwisely did the Roman mythology place Ceres in the rank of the higher divinities, as the sister of Jupiter. With her basket and hoe she leads Mars and Apollo, Bacchus and Vulcan in the procession of the gods. So good, sound, well-flavored vegetables should take front rank in the essentials for civilized peoples. And such Minnesota possesses, luscious in flavor and rich in their perfection.

FRUIT IN MINNESOTA.

Our adaptation for fruit must not be overlooked. There are many States here represented hitherto justly celebrated in pomological fields. That among them such a Northern State as ours should presume to appear as a competitor, certifies her varied resources. In 1883, at the exhibition of the American Pomological Society, in Philadelphia, Minnesota was awarded the Wilder silver medal for her collection of apples. Our horticultural display at this exposition attests afresh our pomological wealth. All doubts as to our being an apple producing State are removed. In 1884 we produced over 200,000 bushels. We have contributed several original apples, such as the Wealthy, to enrich the world's list of this royal fruit. The solidity and flavor of our apples and berries confirm their excellence, and give bright promise of future varied and profuse development. Cultivated grapes flourish well, and 300,000 pounds were reported as the product of 1884. Out of these good wine is produced. Minnesota was awarded at this exposition eleven premiums and three silver medals for best grapes east of the Rocky Mountains. In all the varied family of berries and plums, ours cannot be excelled in the quality of their flavor and relish. Diversified horticulture is one of the permanent and attractive industries of our State.

In this brief citation of mixed agricultural industries, the importance of sorghum must not be overlooked. The sorghum exhibit Minnesota has made and is here spread to your view, of sugar, syrup and candies, is more than a suggestion of great possibilities. It is a direct invasion of that saccharine field heretofore solely awarded to the tropics. That we should compete with Cuba, Mexico, and Southern Louisiana in such a production is surely the unexpected. By the manufacture of ice you have taken from us a native product; we make the law of equivalents good by saccharizing the juice of the sorghum. Both in sugar and syrups our northern State has done nobly, having captured the first premium for best amber cane syrup, and first premium for best amber cane sugar, with strong competition from every portion of the country. Minnesota has thus demonstrated that the sugar line can be removed eighteen degrees of latitude northward.

The crowning glory of our State is her superb system of public and higher schools. The wisdom of Minerva could not have pointed out a nobler policy for the State than that which opens

the door for the free education of her children. Minnesota believes that the common school lies at the base of the problem of self-government. The remarkable and unrivaled exhibit of her school system now before you attest their high character and excellence. At the beginning the munificence of the national government equipped the State with a dowry of lands princely in extent. The sixteenth and thirty-sixth sections in each township are devoted to this purpose. It gives us a grand total of 3,000,000 acres, an area equal in extent to the State of Connecticut.

This grant has been husbanded with tender care. The permanent school fund already amounts to \$6,500,000, and in the future will fully realize \$20,000,000. Besides the income from this fund we raise annually about \$2,500,000. The State has 223,209 enrolled pupils. There are 4,671 school houses, 4,802 common schools, with 6,086 teachers. These teachers were mostly educated in our normal schools, of which the State has three, with a present attendance of 1,375 pupils. As part of the common school system we have 250 graded schools, of which sixty have high school departments, in as many cities and towns, in which students are fitted for the university. The kindergarten system is in operation in all our leading cities. The eighteen public school buildings of St. Paul and the twenty-three of Minneapolis, costing from \$25,000 to \$75,000, unique in their architecture, complete in their equipments, thorough in the systems and methods there in use, and with their 22,175 attending pupils, are probably without a rival in the cities of equal proportions on the globe.

There are six colleges under denominational control, one medical college and three theological seminaries. The State university justly ranks as one of the great universities of the country. It has an able corps of professors, of high repute, and its curriculum covers all the branches of science, literature, languages, mechanic arts, agriculture, and medicine as taught in the foremost universities of the world. Take it all in all, we proudly say that we do not believe that there is any other community better equipped with a system of seminaries of learning more complete, symmetrical, and thorough than the State of Minnesota.

We may justly measure the commercial value of a state by its railways and waterways. How well we are furnished to meet the imperious demands of a commercial age, let facts attest. Nine great railway corporations serve every portion of the state

with good railway facilities, with road beds and equipments which have no superiors in the United States. Our 4,280 miles of railway, considering our area and population, make us as well served as any other state in the Union. The great dual cities of St. Paul and Minneapolis, at the head of navigation of the Mississippi, make the third chief railway terminal point in the country, Chicago and New York alone excelling. The country thus made tributary to Minnesota and its commercial cities, as the gateway to the commerce and trade of the Northwest, is a region greater than all New England, New York and Pennsylvania combined, and gives a field such as cannot be paralleled in any other state. Here terminates the Northern Pacific transcontinental line. Here too gather the great waterways, on the apex of the continent, equidistant from Hudson's Bay and the Gulf of Mexico. We possess unobstructed navigation to the great gulf on the south; through the "unsalted seas" to the Atlantic on the east; while the upper Mississippi and the Red River of the North cheapen transportation through a fertile zone. Engineering science predicts a grand waterway through our charming lacustrine regions, connecting the Red River with Lake Superior. With such a network of railways and vast waterways centreing in Minnesota, nature and art have united their forces to cheapen transportation to its possible minimum.

We might inscribe upon our shield that we are a "terminal state," and invoke that god Terminus, whom the Romans set up to mark the limits of empire. Here ends the western trend of the waterways of the St. Lawrence and the great lakes; here begins the navigation of the Red River of the North; here closes the navigation of the "Father of Waters;" here is the limit of the United States railways, stopping at the line of the Dominion of Canada; here is the eastern terminal of the Northern Pacific. Those conditions have given to the state and its commercial centre, St. Paul, a phenomenal growth. We stand at the gateway of the Northwest to toll its wealth. We are but in the early morning of this exciting drama. The prolific power of a cereal empire, the cattle upon ten thousand hills, fabulous mineral resources, and a thousand wealth producing elements; these, under the creative energies of Anglo-Saxon civilization, are the mighty forces which stand as sponsors for our future growth and greatness. The sober judgments of men are made almost incredulous by the immensity of our resources.

A BRIEF OF HORTICULTURE IN MICHIGAN.

Mr. C. W. Garfield, secretary of the Michigan State Horticultural Society, has kindly furnished us with advance sheets of his report for the year 1884. We make a few extracts, which will not be without interest to Minnesota horticulturists, and many of the suggestions made will apply with almost equal force to the climate, soil, and productions of our own favored State. He says:

"We have no immense wheat fields nor gold mines, nor mountains of iron, nor is our land extravagantly fertile. Cotton is not king, nor is corn queen. In truth we acknowledge no royalty in any one product. But we have a nicely adjusted diversity of products, leading to a great variety of industries, which renders us capable of maintaining a large and prosperous population. We supply our own needs to a very large extent by patronizing the producers and manufacturers within our own limits; and while doing this we need not be without the luxuries of life produced at our very doors.

"Michigan is emphatically a State in which to build homes; independent, attractive homes, in which is engendered a spirit of rest and satisfaction that gives permanence to population and continuous prosperity to the inhabitants. It is very largely to the growth of horticulture in our State that we have these conditions so well developed. Bonanza farming would add nothing to our prosperity. Small farms that are readily converted into delightful homes, by bringing into them the refinements of education, and about them the attractions of modern horticulture, will be the foundation of Michigan's future prosperity. We have outlived the stories of ague swales, barren hills, and sandy plains. We show by our products, our people, and our standing among the states that we need no forced advertising; and we will frown down all attempts to deceive people by leading them to think that we have a country in which capital and hard work are not the price of success.

"One needs but to glance over the wide range of forest products of our State to learn the influence of our peculiar climatic conditions upon the number and diversity of plants that succeed in our State. In cultivated and introduced economic plants employed by horticulture, this same wide range of species is noticeable. In the same county which, under favoring circumstances,

ripens the fig and develops the most perfect peaches, we find the apple in its greatest perfection. Ornamental plants that have to be protected during severe winters with the greatest care, in the climate one hundred miles south of our State, remain openly exposed upon our western shore without harm.

"From quite accurate data I have estimated the sales of apples from Michigan the past season at 5,000,000 bushels, at prices ranging from one dollar to two dollars per barrel. The area in fruit cannot be less than 300,000 acres, and the planting, especially in peaches and small fruits, is rapidly increasing this area. The question of whether we are not going to overdo the growing of fruit for market, very often arises among commercial orchardists, and low prices in years of plenty stimulates the inquiry. But one only needs to go into the great and developing Northwest, where but few of our fine fruits can be grown at all, to get a satisfactory reply to the query; and those who complain of low prices for orchard products need only to compare aggregates with any other farm products to become satisfied with their orchards.

"But the best returns that horticulture in Michigan promises its devotees are not those that rattle in the pocket or swell the bank account. They accrue from the diversity of fruits that can be easily grown with slight expense to furnish the needed supply for a family throughout the year; from the delightful turf that may be so readily grown about the buildings; from the attractive shrubs, annual and perennial herbaceous plants, that may be brought to administer to the pleasure of living a large portion of the year; from the evergreen and deciduous trees that can be grown in so great variety, and which add such charm to premises.

"Rural life in Michigan, with the delightful climatic privileges, and the multitude of things that may be made to contribute to a charming country home, contains within itself profits that cannot be indicated by the dollar's sign. If they do not swell the purse, they contribute largely to the wealth that is rolled up in a full manhood and womanhood, in a happy childhood in a complete home,—where the question of what are we living for, never finds an opportunity to be propounded."

A writer from Stevensville, in Southwestern Michigan, says:

"Berrien County is located in Southwestern Michigan, and has a coast line extending forty miles along the east shore of

Lake Michigan. Climatic influences, caused by the large body of water on the north and west, with a great variety of soils and facilities for cheap transportation, have, within the last twenty-five years, developed commercial fruit growing interests of a greater magnitude than in any other locality in the Northwest.

"During the past two decades the production of the finer varieties of Michigan fruits has not been commensurate with the demand caused by the growth and expansion of the cities and towns of the Northwest.

"Large plantations of apples, alternating with peach trees, were made by the early planters. As anticipated, the apple has outlived the peach, leaving large apple orchards, which often consist of varieties which are not profitable to grow upon soils, and in a locality where peaches and the finer varieties of fruits will always be profitably grown. Our cheap transportation facilities will, however, warrant the growing of the early and beautiful varieties of apples for the Chicago market. All of the lower peninsula of Michigan is adapted to the perfect development of the apple, and, with the exception of occasional years, of general, exceptional production, apple culture must continue to be one of the leading and remunerative industries of the State. The experience of recent seasons has proved that many varieties, which were once popular, are becoming unreliable and worthless.

"It is generally conceded that the most perfect fruits are grown at the extreme northern limit of successful production. During a long time commercial fruit growing in the Northwest was confined to the St. Joseph region; but as the country north of us contiguous to the lake shore has become developed, peach growing has become more diversified, and Berrien County has made a specialty of small fruit growing, while the old peach orchards have decayed.

"Grapes are extensively grown, nearly all our fruit growers having small vineyards which aggregate several hundred acres in the county. The Hartford, Concord, Delaware, Diana, and Catawba are the principal varieties grown, but many new varieties are being introduced, among which the Champion and Niagara are the most promising for market. Mildew and rot prevail some seasons in a few localities, but large crops are marketed annually in Chicago, the prices ranging from three to ten cents per pound.

"With our location and soil and proximity to Chicago, and

with cheap competitive rates by boats and rail, which take our fruits late in the evening and place them on the market early in the morning, Berrien County has not, and never can have, successful competition in the production of small fruits by localities which mature these fruits at the same time in the season. Small fruits have become a necessity to the inhabitants of the civilized world; and while the North craves the early fruits from the sunny South, we are enabled to return the favor, and to supply both North and South with a succession of fruits until we again greet the strawberry from the Gulf states, while the snows upon our fields are melting from the buds, which always produce a sure harvest. Berrien County has in bearing about 7,000 acres of small fruits, about 4,000 acres being in strawberries and the remainder nearly equally divided between blackberries and raspberries.

"Fully nine-tenths of our strawberry fields are Wilson's; this variety still holding the first place with large planters for distant markets. The Sharpless is growing in favor with Chicago consumers, but will not bear reshipping, and is extremely sensitive to frost during the blooming season. The Crescent and Manchester stand next, but pistillate varieties are not popular with our growers. Many new varieties are being introduced, among which the ideal market berry may be found.

"The Turner has been the leading red raspberry, but is giving place to Cuthbert, Reder and Brandywine, all of which are better berries for distant markets, not requiring every-day picking and can be picked much cheaper. Shaffer and Ohio are good for canning and for near market, but are too dark and soft for our markets. Gregg is considered the best blackcap, but black varieties are not as popular as formerly with grower or consumer.

"Melons, asparagus, and many vegetables of the best quality are profitably grown for the Chicago market, but southern points supply the market early in the season, and large market gardens are cultivated in the vicinity of Chicago.

"It is about twenty-five years since persons desirous of following pomological pursuits began to be attracted to this locality. The most of the lake shore country is now occupied by fruit farms, which average about twenty acres each. Prices of these farms range from fifty to three hundred dollars per acre."

President Lyon, of South Haven, on the shore of Lake Michigan, writes:

"As in other pursuits, persons have, not unfrequently, embarked in fruit growing, here, with too little knowledge, means or capacity for the business, and have, for such reasons, failed to make it profitable; while others, under more favorable circumstances, find it pleasant and in many cases, highly profitable. Lands in good condition, in bearing orchards, with the needful buildings and other fixtures, and convenient to the points of shipment are considered worth as much as two hundred to three hundred dollars per acre; while good but unimproved fruit and farm lands not very remote from market may be obtained for twenty-five dollars per acre—possibly even less. Good improved land, suitable for fruit or truck growing, may be had at one hundred dollars per acre in the immediate vicinity of the town.

"As an instance of profitable horticulture, one of our oldest and largest peach growers realized \$13,000 as the net proceeds of the sales of the year 1873. From which sum he deducts \$3,000 for cost of production, leaving the clear proceeds of the year \$10,000. In 1874-'6-'7-'8 and '9 his net sales ranged between 10,000 and 20,000 baskets each year, the clear proceeds, after deducting the expense of production, averaging \$2,000 to \$3,000. These are the proceeds of about eighty acres of bearing peach orchard.

"Red Astrachan, Oldenburgh, Maiden's Blush, Lowell, St. Lawrence, Hubbardston, Westfield, Rhode Island Greening, Baldwin, Red Canada, Golden Russet, and Roxbury Russet are the leading market apples; while nearly all northern varieties, whether eastern or western, are found to succeed perfectly here. The net incomes of a well managed orchard for a single year, when in its prime, may well be so large that even a correct statement might endanger a reputation as to credibility. Such net income should be arrived at by taking the average of incomes for a series of years, reckoning from the date of planting, and continuing during the life of the plantation. Nothing short of this will afford a proper comparison as between orcharding and ordinary farming. A critical knowledge of varieties and modes of management is of the highest importance, since mistakes at the outset are very difficult to remedy.

"The borer in the tree and the codling moth in the fruit have, so far, been the most troublesome insects. There is apparently little danger that apple culture will be overdone. The demand for apples is apparently increasing more rapidly than the supply;

owing, apparently, to the extensive settlement of new and non-apple growing regions.

"Concord grapes are at present more extensively planted than any or even all others; but Delaware is by some regarded as nearly or quite as profitable. For an early grape, Moore's is acquiring a high reputation; also a few early plantations of the Niagara are now in bearing, with indications that it may prove highly desirable as a market variety. Mildew of both foliage and fruit has, in some seasons proved troublesome, and the same is true of the premature rotting of the fruit. The minimum price at which grapes can be grown with any profit is about one and one-half cents per pound. Plants are trained both to stakes and trellises, some preferring the one, and some the other; but the usual mode of pruning is best characterized as *no system*—to leave an amount of bearing wood, depending upon the judgment of the pruner at the moment. The quality of the product, and perhaps even its quantity might, no doubt, be decidedly improved by the adoption of an improved process in this respect. The soil is usually cultivated by a shallow plowing in the spring, after which the cultivator or harrow only is used. The soil is not usually disturbed after an early date in August, as thus the young wood is found to mature more perfectly. Pruning is usually done in November, or from that time to March.

"Strawberries are usually grown here in matted rows, but the production of finer fruit under a more efficient system is believed to be decidedly more profitable. Red raspberries are believed to be more profitable in this vicinity, owing to our milder winter temperature, and their consequent exemption from injury at that season. Still, blackcaps are extensively grown and highly profitable. Blackberries are very extensively grown, and rarely fail to produce a full crop; but since the crop is diminished by even a slight injury to the tips of the canes, it is found safer to plant the more hardy varieties."

Prof. Satterlee of the State Agricultural College says:

"Apple orchards are uniformly most successful on good strong upland that had originally a good sprinkling of oak timber. Some orchards have been set upon a dark colored, loamy soil, underlaid within a few feet of the surface with a wet quicksand. On such soil the trees have grown rapidly for a few years, but have killed badly in severe winter, and the trees that still sur-

vive make very poor returns. Such soils should be always avoided for orchard purposes.

"Some orchards, I have observed, that make a good annual growth and bear full crops of fruit, are pastured very close with hogs or sheep, and by pastured very close I mean kept constantly gnawed down to near the surface of the ground. A large proportion of the codling moth is destroyed, and trees are not sapped by the evaporation that a rank growth of long grass produces. Other successful orchards are cropped with a rotation of crops the same as other parts of the farm, and by judicious fertilizing are kept in good thrifty bearing condition. There is every encouragement for the careful grower to plant young orchards. Nearly all the old, neglected orchards are going to decay, and will soon be gone, while the young trees of the best and most popular varieties are doing well.

"The grape succeeds admirably except in an occasional season when frost destroys the crop. The Concord is sometimes troubled with the rot, but is usually very healthy. The Delaware, the Wilder, the Worden, the Brighton, and many other varieties are quite uniformly successful. The vineyards are kept well cultivated, and the vines trained upon wire trellis, of from one to three wires. Where a single wire is used the vines are trained with a single horizontal arm three and a half feet from the ground. Where more than one vine is used, the amount of new wood left for the production of fruit is in proportion to the vigor of the vines. If very strong in their growth, from four to six canes are left with from twelve to twenty eyes each. The fruit is usually marketed in baskets holding from fifteen to twenty pounds each. In good seasons it can be grown at a profit as low as three cents per pound."

A correspondent writing from Ottawa County, says:

"Lands are not exceedingly high. Improved places, fairly stocked with fruit, can be obtained for seventy-five to one hundred dollars per acre, and wild lands, some distance from market, can be purchased very cheaply. As to profits, one man grew 5,000 quarts of strawberries on less than an acre of land, for which he received five hundred dollars; 1,700 quarts were harvested at one picking. Another man clears about \$2,000 a year on a small fruit farm near Grand Haven."

Secretary Garfield closes his "Brief" as follows :

"In conclusion allow me to say that I have not been able to give the time to gathering the preceding facts that the importance of the work demands, but have sought to give the various sections of the State some representation without too much repetition, to gather in shape to be easily reached, facts concerning the progress of horticulture in various parts of the State. Many localities have not been touched, owing to the little time that could be given the matter, but I trust that in future numbers of the Michigan Horticultural Report added statistics will appear, from year to year, as the aggressive horticulturist shall reach into new fields and record his success and failures. The position of Michigan with regard to the great Northwest, her mild climate, and success in growing fruits, will always give her great prominence as a source from which to supply a large area with the most luscious fruits of the soil. The great question remains to be solved, whether her people will save her climate, and preserve her prestige by a judicious preservation of the forest growth, and the addition of new plantations, where the axman, like a demon of destruction, has attempted to sacrifice the future of a State to supply the present demand of the thoughtless, unscrupulous seekers after riches."

GROWING SMALL FRUITS AS A BUSINESS FOR WOMEN.

PREPARED BY M. CRAWFORD, OF OUYAHOGA FALLS, O.,

For the annual meeting of the Mississippi Valley Horticultural Society, held in New Orleans, January, 1885.

It seems to be according to the order of nature that man should face the world boldly and bravely, rather seeking than avoiding its bustle and competition, but that woman should be defended from the rough experiences of life by the stronger arm of a husband, father, brother or son. Were she always thus happily situated there would be no necessity for planning what woman can do,—not that she should lead a useless life,—no person who is able to work has a right to be idle,—but when woman keeps the home, and attends faithfully to the demands of those vocations which are suited to her, she does her fair share of the world's

work. We all know, however, that even in this favored land very many women are dependent upon their own exertions for a living; and not only this, but many, besides caring for themselves have others looking to them for support. How to provide for these is a serious question.

There are many remunerative occupations which are closed to woman by reason of her want of physical strength. She cannot well engage in agriculture. There is much heavy work connected with it which she cannot do herself, and if she attempts to hire it done the proceeds will often fail to pay the help. Market gardening is open to the same objection, and both have the added drawback of requiring too much capital.

She cannot find employment as a common laborer. Aside from the barrier of lack of strength, she could not engage in such an occupation without losing much that makes her womanly, and being reduced to the level of a beast of burden. This cannot be done in the United States without a radical revolution in public sentiment. She cannot learn the mechanical trades, nor engage in mining or lumbering, or railroading.

When she turns her attention to the lighter avocations the case is but little better, for though she may get a situation as clerk in a store, or operator in a telegraph office, or other similar positions, she must be content with half pay. She may have all needed ability, perfect integrity, and a determination to render good service, but she must do for five dollars a week that which a young man—too effeminate and genteel to work, too ignorant to enter a profession, and too poor to engage in business on his own account—will receive ten or more. We have an opinion of these ambitious young men who aspire to measuring tape, dress-making, or any other light work that a woman could easily do.

When the professions are considered as a means of livelihood, woman is virtually shut out. A very few of her sex have studied law and been admitted to the bar, and a few have entered the ministry. Some have studied medicine, and are doing a noble work in their chosen profession. Still, the number who can engage in the law, the ministry, or the practice of medicine is so very small that the professions seem hardly worth counting as avocations upon which women can depend.

It is conceded on all hands that women are naturally adapted to the work of teaching, and the number of those who take it up is rapidly increasing; but here again they are subject to the galling injustice of seeing men receive much higher pay for the

same work. Even the principal of the high school in so large and enlightened a city as Cleveland, Ohio, asserts that men should receive better salaries than women for teaching, because they will not work for the same. They demand more, therefore they should receive more.

We hear much about the avenues that are open to women at the present day, but look at the subject as we may, they have not an equal chance with men. Besides being shut out of many occupations by physical incapacity, and working for inferior pay in many of those in which by superior fitness and faithfulness they have gained a foothold, they find themselves elbowed by men, even in those avocations which belong especially to them, as, for instance, millinery and dress-making.

But there is a pursuit in which very few women are as yet engaged, which offers more advantages with fewer drawbacks than any other to which she can turn her attention. This is the cultivation of small fruits. The leading characteristics of this work are such as to recommend it especially to women.

It is not laborious; does not require great physical strength, and yet it furnishes proper and plentiful exercise for both mind and body. There is but little heavy work connected with it, and that little can be hired. It does not require much capital. But little land is required, and no expensive implements. When the business is begun in a small way, and gradually increased, there is scarcely any expense worth naming.

Fruit growers meet with less competition than almost any other class, and next to none from coarse or ignorant people. Their products generally meet with ready sale, and here, for once, woman has an equal chance with man. When she sends fruit to market no one demands it for half price because it was grown by a woman.

Fine fruit sells on its own merits, and while it has no fixed value like wheat, a good article is always in demand at a paying price. No advertising is needed to sell it, and no money is spent in building up a trade. It can be grown in any part of the country, and there is a market for it wherever people live. The demand for fruit is not based simply upon its being delicious and attractive; it is a real need. The human system has a natural appetite for the combination of acids and sugar that is found in berries.

When we think of the thousands and millions of people who live in cities and raise nothing, we partially realize the extent

of the demand for fruits, and the conclusion is that for a long time to come the demand will exceed the supply. True, the market is sometimes overstocked for a day or two, but in such a case the producer can dry or can the surplus. The market for dried fruit is never overstocked.

Small fruit growers have another advantage in the fact that their products come into market in the summer, when people have money and are liberal in spending it, rather than in the winter, when many are idle, and when those who have employment find that the necessities of life make such heavy demands upon their earnings that they have little left for luxuries.

The advantage of being one's own employer is worth much. No one can fully appreciate this until he has been subject to the call of a bell or a whistle. There is not a single qualification needed for the business of growing small fruits that woman does not possess. Indeed a much larger proportion of women than of men are suited to the work. Farmers in general will let their families go without fruit rather than to raise it, but farmers' wives are interested in horticulture. They raise the flowers, and often the vegetables. They attend to details. They are in sympathy with their pets, and learn their habits much sooner than men do. As a rule they are not so ready to neglect their work as men are. Added to this, they have a "knack" which gives them success. A skilful gardener once said that a woman with a cracked teapot could root cuttings that an experienced propagator with all his modern appliances would fail with. It is not hard work, nor the ability to do hard work that makes fruit growing successful; it is the heart work, the real interest, the carefulness, and faithfulness, and good judgment that are put into the enterprise.

Lack of knowledge is no obstacle, for this can be acquired easily and quickly. There are no secrets in fruit growing. Those engaged in it are always ready to communicate their knowledge, and every horticultural society is engaged in disseminating information.

HINTS TO BEGINNERS.

First—Post up on the work. Study your facilities, your land, capital, nearness to market, and ability to obtain needed help. Secure the control of some good land. It costs as much to prepare and cultivate poor land as rich, and the profits are little or

nothing. Begin in a small way. You will make some mistakes, and will have much to learn. If you do everything well and at the right time you cannot attend to much at first. Plant but few varieties, and only such as generally succeed. You can well afford to do without those new kinds that are "destined to supersede all others." Be more practical than theoretical. Be more ready to believe what you see than what you hear. Take some good horticultural papers, and read them attentively. Join a horticultural society if there is one within your reach. Do your work well. Both profit and satisfaction come from a little well done, rather than a large plantation grown in a slipshod manner. Sell no poor berries. They will injure your credit more than they are worth. Use them, or give them to those who have none and cannot afford to buy.

Keep your plants growing during the growing season. Injure no roots in cultivating. Plants make their own repairs, but they should be better employed. The force expended in healing a broken root might be more profitably used in building up the plant or storing away nourishment for the next crop of fruit.

All the berry plants do best on land that is rich, moist,—not wet,—and cool. Without richness there is nothing to make fruit of. Without moisture to dissolve the food in the soil it is unavailable, for all plant food is taken up in solution. Without a comparatively cool soil the plants cannot remain healthy. Each plant should have plenty of room, and no other root should be allowed to rob it of food and moisture. The surface of the soil must be kept loose by stirring or mulching, so as to admit air to the roots, for they cannot live without it. As a plant can make its wants known only by signs, he who best understands these signs and is most faithful in supplying the wants expressed by them, will succeed best.

The fruit grower is an employer, and each plant set out is an employe, which can accomplish much or little, according to the master's knowledge of its needs, and his faithfulness in providing for them. Each plant set out is an independent establishment, and, if not hindered, will go steadily on, doing the work appointed to it by nature—gathering its food, and changing the raw material, by means of the rain, the sunshine, and the atmosphere, into delicious fruit. It is a pleasant thought that the plants which we set out and care for are so many little helpers engaged in our service, and whether we sleep or wake, whether we are sick or well, they still go on and on with their silent,

busy work. It is the fruit grower's province to see that all the conditions are favorable, so that there may be no interruption of this work. His returns will be in exact proportion to his judgment and thoroughness in this respect. This is a point where knowledge is power.

AMBER CANE.

BY SETH W. KENNEY.

Editor Farm, Stock and Home :

In the first place, it is known that at present almost every village is supplied with amber cane products. This is as it should be; we should raise all such things that pay, as well as the amber cane. The low prices of sugar have operated against the high prices heretofore obtained; but this industry to-day is not as much depressed as the wheat, and from the seed already put out, I can say that the industry has come to stay. Good cultivation, good seed, and good, strong machinery, these three points are all to be observed to succeed. I ought to have said plenty, good, dry wood in addition.

Since my return from New Orleans, and after hearing the remarks and seeing Minnesota taking four first premiums on amber cane goods, it must be evident to all that this cane is to the manor born, and it is an omnipotent factor of wealth to the State we ought not to overlook.

It has been found that *bagasse*, put up in ricks, long and high, and built narrow, will make a valuable fuel for boiling, but it has not proved very valuable used the same season in this climate.

The roots of cane strike deep and bring up from the sub-soil that which will increase the yield of wheat or oats in one season from forty to fifty per cent. This is the testimony of our best men.

The machinery of capacity, to grind one hundred gallons in ten hours, can be bought very reasonable at present, and I hope what the vice president of the Sugar Exchange said may continue to be true, "that Minnesota took an advanced position in this industry."

A great many farmers do not save the seed, and it is so valuable for milch cows it should all be saved. We have found it equal to cornmeal to increase the flow of milk.

If the seed is boiled it fattens pork rapidly. Over one-half of the crop in Kansas is used for feeding purposes. So we see the crop coming to be of great benefit to many and in many ways.

The increased facilities in making sugar by our friend Porter, of Red Wing, is one of the greatest points in my opinion, and the future will witness some great advances in this industry.

Rice County, Minn.

FUTURE OF THE SORGHUM SUGAR INDUSTRY.

BY PROF. WILEY, OF WASHINGTON, D. C.

At the annual convention of the Wisconsin State Agricultural Society, held at Madison, in February, 1884, an interesting paper was contributed by Prof. Wiley, from which we make the following extracts:

"In regard to the future of this industry I will say that as a syrup-producing plant, sorghum cane has already become firmly established; that the product of syrup in the country is already approaching that which the country consumes. I have found that the amount of syrup that was imported into the country during the past year was less than 50,000,000 gallons, while the amount that was made from sorghum syrup in the country during that period was nearly as much. From the best information at hand, the product is almost equivalent to one gallon per head for all the people of the country at the present time. An industry which is already developed to such an extent needs no prophecy in regard to its future; its future is already assured. I will say to the farmers of Wisconsin, sorghum cane is of more importance as a syrup-producing plant, to your State, than as a source of sugar. As a syrup-producing plant it is a certain crop. As you well know there is no more hardy crop than sorghum cane; it will grow in a dry or in a wet season, in a hot season or in a cold season. Of course in a cold season there is some difficulty about its maturity, but it is not necessary in order to make a fair article of syrup that the plant be ripe. In almost any season you can have a crop of sorghum.

The sugar consumed in this country is more than forty pounds per head, and hence it becomes an immense article of consumption. This country does not begin to produce the sugar it consumes. People sometimes think the sugar they get is nearly altogether made in this country, particularly in Louisiana; while the fact is that the sugar made in Louisiana is a very small pro-

portion of the amount consumed. We imported into this country during the season of 1883, according to the estimates, nearly 1,200,000 tons of sugar; while the amount of sugar we made in this country did not altogether exceed 100,000 tons. You see we produce only about one-twelfth of the sugar consumed.

Where does the sugar come from that we import? A great deal from the tropics, from Cuba, and a great deal from the Sandwich Islands, which comes in free from duty, and we are now importing large quantities of sugar from Germany and France. Think of it; France and Germany, a country exhausted by a thousand years of agriculture, no more suitable in any respect for the production of sugar than the United States. The most of the sugar we import is made from the tropical cane, the sugar cane. The sugar they produce in Europe is made exclusively from the sugar beet. In the Sandwich Islands the sugar is made from the sugar cane. In this country the sources of sugar are four: the sugar cane as it grows in Louisiana, producing by far the largest amount of sugar; next the sorghum cane, or the sugar beet, and fourth the sugar maple; these are the four sources of sugar to which we must look in this country.

A few years ago the amount of sugar made from sorghum cane could be numbered by hundreds of pounds. The past year has been a very unfavorable one for the production of sugar, but the total amount produced in this country is not far from 1,000,000 pounds. We may hope with increased skill and means of production the amount or quantity will increase very rapidly. The sorghum sugar factory at Rio Grande, New Jersey, has passed through three years of successful life, producing large amounts of sugar, and the crop has not been injured by the frost. I have taken the records of the signal service and traced a series of isothermal lines which indicate those portions of the country whose climate is the same, as far as heat is concerned, as Rio Grande. The lines run in a northwesterly direction, . . . crossing the Mississippi River near Minneapolis, passing out through Northern Minnesota. The conclusion is that all this vast Northwestern country is as favorable to the growth and maturity of the sorghum cane as the country on the shores of New Jersey. I think all of you will bear witness that the general result is that the early amber cane ripens in this whole region. Ninety days of good growing weather is sufficient to mature the earlier varieties of the sorghum cane. But there is another period as important as that of growth to be consid-

ered. To make sugar profitably requires a large plant. No method has yet been devised by means of which sugar can be made profitably in a small way by each individual farmer. Expensive machinery and extensive labor are required for profitable sugar making. Sorghum cane which has been frozen is almost entirely ruined for sugar making purposes. Although the belt of successful growth extends all over the Northwest, the belt of successful manufacture does not. An early winter is indispensable to a beet sugar country. The beets are harvested and protected in pits from the frost. The beets could be put in silos and worked through the entire winter. Why not preserve cane in this way? I have made one experiment of putting the stalks under ground and covering them up, and it has been entirely successful up to the present time. If the cane can be preserved in this way the manufacturing belt can be extended all through this region.

The demand for syrup in this country is a limited one compared with the demand for sugar, and it will be a long time, under the most favorable circumstances, before the supply of sugar can equal the demand.

The State of New Jersey gives one dollar bounty on every ton of cane grown, and one cent per pound for every pound of sugar made. They did the same thing in France and Germany. Napoleon put this industry on its feet by bounties. It is wise economy on the part of our government to support every weak industry so that hereafter it may become a source of wealth. I believe this country will yet make its own sugar.

DAKOTA HORTICULTURAL AND FORESTRY ASSOCIATION.

HORTICULTURE AND FORESTRY.

We have received a copy of the initial number of the Horticultural Society of Dakota, from which we make a few extracts which will be found of interest.

The Territorial Horticultural Society met in Huron, Dak., on Thursday, Feb. 5, 1885, with E. De Bell in the chair and W. F. Eastman as secretary. The president opened the session with the following remarks:

Gentlemen and fellow members:—In this, which is really our first meeting, we come together to communicate with each other the knowledge which we may have acquired during our brief residence in Dakota, relative to the various trees, plants and fruits, and to relate what is new and valuable in our experiences; to sift the good from the bad, and scatter throughout our Territory such valuable information as we shall be able to gather that may be of service to our fellow men, and prove light-houses upon the pathway of horticulture that shall direct the laborers in this calling forward, until these fertile plains which we have chosen for our future homes shall be clothed with beautiful groves and forests, and orchards bending beneath their burdens of golden fruits, and Flora and Pomona shall lavish upon us an abundance of their precious gifts. These are not mere visionary thoughts, for enough has already been learned to prove that, with careful and intelligent selection of varieties, and proper care, we may rank with any of our sister states, both in quantity and quality. And what of them? Two years ago Minnesota carried off the highest prize at the American Pomological Convention held at Philadelphia for the finest display of apples. This winter Iowa takes first prize at New Orleans for best display of fruits from the Northern States. And I would challenge the world to show finer apples than were grown in Dakota in 1884. It behooves us as a horticultural society, and as a party that will be looked to for correct information, that we proceed with the utmost caution, and that the work of discrimination shall be such as will direct the planter upon the road to success. The labor that has been performed in this field thus far in our Territory has been carried on by each unaided and alone. Each one has been paddling his own little horticultural canoe upon a broad and unknown sea, and everywhere are placed false beacon lights that lead the frail craft upon the fatal rocks. The greater portion of these false lights have been set by the unscrupulous and unprincipled tree agent, like the pirate of the merchantman upon the high seas, yet unlike him there is no law to punish. Other false lights, though perhaps not intentional, are accountable to the nurseries themselves, who list and recommend for this section varieties that are worthless, and varieties which if not known to be worthless by them, certainly shows an inexcusable lack of information on their part, and causes an irreparable amount of damage to their customers. The loss of money is insignificant in comparison to the loss of faith, and the loss of time spent in planting worthless varieties. Let us combine our forces

and our knowledge, and build here in the glorious Northwest, where nature has been so bountiful in other gifts, a state abounding in beautiful homes surrounded by all the luxuries of forests, orchards and gardens.

After the address by the president, Mr. A. J. Phillips, of Blunt, read a paper on tree culture, which was very interesting and will be found elsewhere.

In the somewhat animated discussion that followed, in which everyone present took part, the green or blue ash, white willow, and white elm were agreed by all to be without objection for the Territory. The box elder was a general favorite. The soft maple was condemned by all for planting north of the main line of the C. & N. W. R'y. The red cedar was unanimously indorsed and the Scotch pine and Norway spruce were highly recommended. The larch was a failure.

The first business of the evening was the report of the committee on fruit list, as follows:

Apples: Wealthy, Duchess, and Tetofsky. For trial in the Missouri valley as far west as Springfield, Walbridge, Fameuse and Haas.

Crabs: Whitney No. 20, Transcendent, Hyslop and Virginia.

Raspberries, Red: Turner, Cuthbert.

Raspberries, Black: Gregg and Doolittle.

Strawberries: Crescent and Chas. Downing.

Currants: Red Dutch, White Grape, Victoria, Long Branch, and Holland.

Gooseberries: Downing, Houghton.

Cherries: Early Richmond for trial.

Plums: De Sota and Forest Garden.

Grapes: Worden, Janesville and Concord.

Mr. De Linde's list added the Red Siberian crab, native plum, Mammoth Cluster and Queen of the Market raspberry, Snyder blackberry, Wilson, Kentucky and Manchester strawberries.

FRUIT AND FOREST TREES FOR DAKOTA.

BY A. J. PHILLIPS, BLUNT, DAK.

Mr. President and Members of the Dakota Territorial Horticultural Society:

Being now located in Southern Dakota, five hundred miles from the scenes of my horticultural experiences of the past fifteen years, I confess I found some difficulty in selecting a sub-

ject for a paper, when I accepted the invitation of your secretary to be present at this meeting and read one. But, as I was anxious to meet with you, and form new acquaintances in horticulture among those who, by a longer residence here, could give us information in this, our chosen profession, that would be valuable to us in forwarding our work, I concluded to give you a few thoughts on tree planting in a general way which may draw out discussions that will be both interesting and beneficial to all concerned. Now, for me to tell you that this great Territory, extending from Minnesota on the east, to the foot hills on the west, and from the extreme northern boundary, was and is practically treeless, and needs timber and fruit trees, would be useless and a waste of time. You all realize this fact. For the purposes of this brief paper I will make only two divisions of my subject. First, planting of forest trees and evergreens, and second, planting fruit trees. These departments of tree planting are of that importance to the inhabitants of Dakota, that their value can not be estimated in dollars and cents. And the advantages, health, wealth, and comforts which result from them are of that class that cannot be enjoyed only by the planter himself or his family. But they are a benefit and a lasting good to the neighborhood, to the town, county, and state where he resides. For if it is a fact, which I fully believe it is, that the only protection there is for the Dakota farmer against the fierce blasts of the polar regions that come unobstructed so many miles through the Northwest, and which finally spread their fury in the dreaded prairie blizzard, or the warm sultry and withering winds which come from the south and southwest, that oftentimes blast the fondest hopes and destroy the prospects for a crop in a single day, is in planting forests and wind breaks, then I say the man who improves his tree claim as the law requires, or plants a border of forest trees and evergreens around his homestead, or even around ten acres on which his farm buildings are situated, not only protects his own property from disaster, ruin and waste, but to a great extent protects and enhances in value, the property of his neighbor. These winds, like the tides of the ocean, are all right and fill their mission in the laws of nature, but in both cases it is man's duty to protect himself, his family and property, from their disastrous effects. Again, if it is a fact, and I believe it is, that the planting of forests increases the rains, and causes them to fall more equally on the just and unjust, and eventually furnish fuel and lumber,

who, I ask, can estimate their value to the coming generations who will occupy this great country? It would be hard to find a man that would say he did not believe the planting and growing of trees would be a benefit to the country. But it is easy to find plenty who say they don't believe that forest and fruit trees can be grown successfully on our high prairies. These same fellows have been found following in the wave of emigration ever since the Prairie States began to be settled, and whenever they have remained long enough they have been reaping benefits from tree planting, though it was done by their more energetic and industrious neighbors. It is also easy to find men who would give the last dollar out of their pockets to send men to your capital to lobby bills through to move capitals, divide and subdivide counties, make more county seats, incorporate cities and villages, all of which means to increase officers, and as a result increase taxes on the already overburdened tax payer. Many of these left the East because there were not offices enough to go around, and they are anxious to derive means whereby they can be supported in Dakota. But, as I honestly believe, the future wealth and prosperity of the citizens of this great Territory depend largely on the planting of trees, why would it not be more suitable to raise money and send men to confer with our legislature and urge them to pass some county and state laws to encourage tree planting? Those states that have exempted a certain number of acres from taxation for the planting of trees, took a great stride in the right direction. The pioneers of Dakota, being largely Americans, mostly intelligent farmers from the East and South, it is to be expected, they will plant trees generously. They have much to encourage and guide them. Illinois and Wisconsin have been experimenting in tree planting for many years in an open country and cold climate, and have been publishing the results from time to time. Minnesota, our sister State on the east, has been following in the wake of Wisconsin in her experiments and in the diffusion of horticultural knowledge. So we too, can organize here and profit by the experience of those states, until we as a society, are well established and become able and willing to impart instruction to still newer portions of the country. I consider the outlook promising and favorable for the good work going on. I well remember in 1850, in Wisconsin, of hearing business men and farmers say, there is no use in planting apple trees here, the winters are so long and cold, and the prairies so windy that they will die before they will

produce an apple. But when I look over the statistics of that State and find that in 1880 she produced over 3,700,000 bushels of apples, I make up my mind that those men were mistaken and feel like saying something to encourage Dakota farmers to plant fruit as well as forest trees. Hardy varieties can now be obtained so that the selecting of them is not so much of an experiment as it once was. The two main points are studying the climatic changes and finding the extremes of cold in a given locality. Then finding the resisting powers of different trees to withstand that cold. These are the foundations of successful fruit and tree planting. Fruit we must have, and the apple is admitted to be the king of fruits, and to have it in any quantity, we must grow them to a great extent, or we and our families must go without this health-giving blessing. Exhibiting apples at fairs and winter meetings for the past ten years has convinced me that the farther north apples can be grown, the handsomer they will be, and in firmness and quality, cannot be excelled.

Now if the statements contained on the pages I have read are true, is it not worth an effort on our part as horticulturists to devise means to encourage tree planting? How shall we do it? My main hope is with the young. We must interest and educate the children. An ancient king once said children should be taught that which would be of most value to them when they grew to be men and women. The late Bayard Taylor said the work of the horticulturist was the beatification of nature. The most lasting pleasure of horticulture is the planting of trees. To interest the children, we must make the home attractive. We cannot expect that a desolate prairie lawn, with its many tilled acres, as devoid of beauty as the desert of Arabia, will offer any attractions for our children. They will be staying rather than living; waiting and longing for the time to come when they can desert that place and leave their aged parents by the hearth stone alone to spend the remnant of their days in solitude.

A farmer told me last fall that he could not afford to set out trees; said his crops were poor and the hail damaged them and he would be obliged to live close the coming year, but before he left town he paid out three dollars for tobacco, for three month's use, or twelve dollars a year, which expended for trees would have made his home attractive, but he preferred to throw his money away. The farmer who allows the home of his wife and children to stand desolate on the prairie instead of buying and planting some forest and fruit trees, which can be cheaply done,

is forming a blank place in their memories. Far better would it be for him to interest them, and not only plant trees himself, but show them how, and change the complexion of their surroundings. It will furnish him in timber, shade, fruit, health, comfort, and beauty. Plant trees wherever and whenever there is a chance, in city, village, country, and much more on the broad prairie, by the roadside, in our school yards and in our cemeteries—the resting place of the dead—plant them on the anniversary of the departure of some dear one, and they will prove to be living monuments to their memories, reminding us more pleasantly than marble slabs. Well do I remember the trees I loved in childhood; the old chestnut tree by the school house, where we played in those happy hours, brings many pleasant reminiscences of the past.

In the city of Blunt, Dakota, the first thing of beauty that attracted the attention of the pioneers and railroad men was the lone tree. A large cottonwood standing in the valley far away from its fellows, beautiful and majestic; inviting the birds into its branches and seeming almost to say, "I have been protected and cared for by an unseen hand to show to the settler that timber will grow here, and also to serve as a landmark and guide to the traveler in his journeyings." What, I ask, you will perpetuate your memory better with those you love than to have them say to those around them after you have passed away and by many been forgotten, "My father planted that grove or those shade or fruit trees?" If you try to interest the boys and girls on the farm, you give them a colt, a calf, lamb, or pig to care for and have for their own. Now, I say in addition give to each a tree, both shade and fruit; leave them to care for and protect them with their own hands; it will create a desire to learn the best modes of cultivation. Much more of an accomplishment than many of the amusements of the present day. I have thought much of this plan for Dakota. Let the school districts purchase large school house sites. Hire teachers that one qualification shall be to know how to plant and care for shade trees. Then give each scholar a tree and a place to plant it. The attention bestowed on it will employ many an otherwise idle moment and create a strife as to who shall do their work best. For the small ones whose strength is not sufficient for the task, go and plant it for them and care for it until they are able to do it. If district boards should take this matter into hand, and they should be men interested and qualified for this work, what, I ask you,

gentlemen, would be the appearance of Dakota's 10,000 school houses in twenty years! And what would be the increase in the value of the same? Tenfold is a small estimate, as in that time the winter's fuel could be cut in a stone's throw of the house. Birds would come and sing and build their nests in the branches, while the little ones could play in the shade and listen to their songs. What more fitting companions could they have in their innocent days? It would make lasting impressions on their minds. Now, allow me, though I am trespassing on your time, to duplicate the foregoing for the farmer's home which should be made, as before stated, attractive and comfortable. Substitute fruit trees and evergreens for at least part of the shade trees. Give the children fruit trees to plant and care for them as their own. While they are doing it they are learning to work, and have a better chance to breathe God's pure air than any indoors employment can give. There is plenty of room in the garden, the yard, or the orchard. What, I ask, would give you greater pleasure after the weary toil of the farm than to have the children come to you in the spring time and take you by the hand and say, "Oh pa, do come and see the beautiful blossoms on my apple tree?" Or in the fall have them place the beautiful ripe fruit in your hands and say, "these grew on my tree; ain't they nice?" Ah, it would give you a thrill of delight in your tired moments that you little dream of! If this was followed up they would want to learn to bud and graft, to show fruit at the fairs and attend horticultural meetings and exhibitions; and ere long reform schools and jails would be almost useless; and saloons, those nurseries of crime in this new country, would be less patronized than they now are. Tramps, if you have any, will have to be imported. And, as I asked in the preceding case, what would be the appearance of Dakota's 100,000 farms and homes in twenty years? I leave it for you to consider and answer. The railroads of the West have done well. They, with few exceptions, have always been ready and willing to carry the horticulturists and tree planters to and from the conventions at reduced rates. They have also in many cases transported fruit and forest trees at very low rates of freight for actual settlers on the lines of their road. But they need to do more. They should furnish a hand on each section in spring and summer to plant and care for trees, and have an experienced man employed on each division to take charge of the same, selecting trees, etc. These continuous groves would be ornamental and useful; they

would soon render snow fences of less importance during our snowy winter, and not many years would elapse before they would furnish ties to repair the road. The roads west of St. Paul have taken this matter in hand and have planted many trees. The memory of the late L. B. Hodges, of St. Paul, Minn., will ever be revered for the zeal he manifested in his life-work devoted to the forest tree planting in the West and Northwest.

Before closing this essay on tree planting, will say it is a subject in which I take a deep interest and wish I was capable of giving you more information in regard to it. It calls to my mind many associations of the past. A day spent in the large orchard of A. R. Whitney, of Illinois, the originator of the Whitney No. 20 crab apple, taught me lessons I never shall forget in tree planting. In this orchard 25,000 bushels of apples have been gathered in a single year. Its eastern boundary is a row of bearing chestnut trees half a mile in length; shade trees and evergreens of all kinds abound and give the farm the appearance of a forest. In the door yards are groups of large pines, some of them over three feet in diameter; they tower high above the rest; the wind whistling through their branches sounds like the noise of a pine forest. Under these trees that tree planter eats his evening meal and visits with his family and friends. Now, for me it was hard to realize that this very spot was, less than forty years ago, a wild, naked prairie, like ours here, where the knowing ones said timber and forest trees would not grow. Then to me the thought arises, what will this country look like in thirty years if the present generation of farmers, school officers, and business men plant trees. Other associations crowd my memory. The pleasant times I have enjoyed with the veteran tree planter of Minnesota, Peter M. Gideon, who, in his ardor for planting, discovered and gave us the Wealthy apple tree. How can we of the North ever repay him; and still he pursues, though his hair is white as snow, his favorite calling, hoping by persistent planting to give us a long keeper as good as the Wealthy. Days and nights spent in company with one of Wisconsin's wheel horses in tree planting, Peffer, of Pewaukee, associate with them many interesting facts learned about the business. Time spent looking over the orchard and buildings of the late Dr. Jewell, of Lake City, Minn., bring fresh to my memory the first planting of Wealthy trees, which I obtained from him. I can only imagine what the life-work of my friend A. G. Tuttle, of Baraboo, Wis., will result in while planting his one hundred

and fifty varieties of Russian apples, when I remember his immense show of those apples at the Wisconsin State Fair, last fall. In speaking of tree planting in cemeteries, I associate with it the work of one of Wisconsin's energetic tree planters, Uncle E. Wilcox of La Crosse, who was the means of planting, and with his hands planted many of the beautiful evergreens in the cemetery at Trempealeau, Wis. At his golden wedding two years ago, I told him that the planting of those trees would perpetuate his memory when his other labors were forgotten. I could multiply these associations indefinitely, but must not trespass longer on your time, as my paper is already too long. I can only say, as to varieties, that for myself, from observations and the best information I can get, I should plant for timber box elder, green or blue ash, white willow, cottonwood and elm. For fruit or apple trees, would plant the Duchess, Wealthy, Tetofsky, McManus, White apples, Whitney No. 20, and Transcendent crabs to begin with. Evergreens I would plant, to start with, Norway spruce and Scotch pine. In conclusion I will say, if you wish your society to prosper, and your meetings to be interesting, you must persuade the ladies to attend. Their presence will encourage you, and they will give you some of the best practical papers you have. Wisconsin boasts, and well she may, of her able corps of lady writers, surpassed by no state in the Union. Foster this society. Your mission is a grand and glorious one. In the near future you will see your farms encircled with belts of timber, and the once called Great American Desert will furnish the home circle with warmth and comfort, the mechanic with material for his handiwork, the farmer with fencing and building timber, the evergreen surroundings making the now desolate and neglected farmers' homes the most attractive places in our memories. Tree planting in our cemeteries will make the resting place of the dead look beautiful, and the orchards will furnish fruit in abundance for your families and friends, and all will enjoy the satisfaction of knowing that their labors have been rewarded, and that they have accomplished a great and lasting good for themselves and their posterity.

ORCHARDING IN DAKOTA.

BY MRS. LAURA A. ALDERMAN.

Read before the Territorial Horticultural Society of Dakota.

Who shall decide when doctors disagree? Certainly no school of doctors ever disagreed as do our horticultural doctors in this new Northwest. The reason is obvious. The methods that were successful in handling fruit trees in the East proved failures here. The trees themselves were disastrous failures. Then while the many were ready to say "You can't raise apples here," there were a few heroic souls like Gideon, of Minnesota, who said he would raise apples in Minnesota or leave the State; and he would not leave the State. But the old established methods having failed us, we were at sea as to what to do next. This left the field to the theorists, and for a time they held undisputed possession. Now a cold demonstrated fact is not particularly inspiring if we have to adopt it as the result of another's research. But your theorist is always an enthusiast; his theories are his very own—his brain children, as Whittier has it—and he loves them because they are his, and his delight is to rush into print and expatiate on them. One cannot pick up a paper without being confronted, usually on the patent side, by some absurd theory or marvel of by-gone ideas and methods that passes for horticultural wisdom.

In the meantime the silent workers were developing a horticultural science for us, and not until their theories had crystalized into demonstrated facts did they give them to the world. All honor to Gideon, Sias, Patten, Harris and their co-workers who have pioneered their way to success in horticulture and pomology in the Northwest, and who saw in their most discouraging failures the germs of future success. Such men see with their brain as well as with their eyes.

In telling you, as I now propose, how to successfully raise apples here, I shall reset many of the jewels that have fallen from their lips as we have sat at the feet of these Gamaliels and learned of them, and I trust I may be allowed to say in this connection, that by following their teachings we have been singularly successful, both in the orchard and nursery, failure being the rare exception.

In selecting an orchard site look less to convenience than to adaptability. If there is a fact in horticulture that is proven beyond a doubt, it is that our orchards should be planted on northern slopes, northeastern being most desirable, southwestern least so. The reason is that the latter site will have the greatest extremes of temperature, and the former the least. In this country we sometimes have practically but two seasons—summer and winter; instance the season just past—and we find that the sun is the root of most of our pomological evils. Your orchard that is nicely protected by a dense grove just north of it, with the ground sloping to the south, giving it a warm, sheltered site, was taking delightful sun baths all through last October, and was kept in growing condition till fairly into November, followed by the coldest December that Dakota has ever known, and next spring before the ground thaws the mercury may stand for hours at summer heat in that same sheltered nook. Your trees are full of a watery sap, the leaves, that act as escape valves in summer are still in bud, and the sap cells are filled to their utmost capacity by the action of the sun's rays. At night the inevitable freezing bursts them and the mischief is done. You have killed your trees with mistaken kindness. Apropos of this subject, E. Gaylord, of Nora Springs, Iowa, writing under date of Sept. 25, 1882, in reference to the cold Christmas of 1879, and the sudden thaw which followed immediately after, thus remarks upon a kind of protection that does not protect, and another kind that does. In all our exposed and unprotected orchards the trees came out in fine condition; but in our protected sites, hemmed in by hill and timber, they barely had the breath of life left in them. The Duchess grew three inches the season following in the latter orchard, and twelve inches in the former. The sun kills more trees than all other causes. As to the soil for an orchard, avoid alluvial soils, and, if possible, select an elevated site with a clay subsoil, avoiding very sandy soil and valleys. If your land is wet and flat, plow by throwing the soil toward the tree, and drain off all surplus water. Fruit trees will not thrive in wet, sour soil. It is best to have the land in thorough cultivation before planting, but we find that by the use of a little mulch we can avoid the ill effects of the lack of previous cultivation. Now, as to the varieties to plant. If you are wise you will plant but few varieties, leaving the testing of new sorts to the nurserymen. Nature has been very kind to us in the quality of the apples that have proven successful here, the

Wealthy being unsurpassed in the number of its good points by any of the famed Eastern varieties, and the Duchess, which is acknowledged among fruit growers as our standard of hardness, being unsurpassed as a cooking apple, and withal being a very good eating apple, though not equal to the peerless Wealthy in that respect.

It is a singular fact that while Minnesota, with her one hundred and forty varieties, carried off the honors and prizes at the American pomological exhibit in 1883, the Duchess and Wealthy are the only ones that are recommended by her horticultural society for general planting throughout the State. This is because of their universal adaptability to all reasonable conditions and soils, and not because they are the only desirable sorts that she produces. But there is still another reason. Many kinds of apple trees grow weaker as they grow older, and die in the orchard just as they come into bearing; hence they cannot confidently recommend a tree until it has stood the test of many years. All fruit growers confidently believe that the Northwest has some new varieties that will not only equal but excel any that we now have. The passing years are testing them, and it will be a new illustration of the survival of the fittest. That many of them will survive we have every reason to believe, and become pomological blessings to us. But in the meantime, unless you want to try experiments, beware of new varieties of the apple sold at fancy prices. They may be very promising, but usually their promise is vastly better than their performance. Do not understand me to say that I should discard all standard apples but the two mentioned, but they should be our main dependence. There are several others, such as the Walbridge, St. Lawrence, Plumb Cider, Fameuse, etc., that we should plant in limited quantities. Of these we have planted quite largely of the Walbridge, because of its excellent keeping qualities, planting it on our most elevated ground, sloping to the north, trusting to the kindly embraces of the north wind to protect it from itself, its grave fault being its tendency to grow until late in the season.

Of the crab and hybrid apples we have a good assortment that are adapted to our wants, many of them of superior excellence. To illustrate what may be done by what has been done, I will mention that in the spring of 1878 we planted in an orchard of hybrids and crabs the Hyslop, Meader's Winter, Chickasaw Crab, Beach's Sweet, Orange Crab and Transcendent. These

have all proven perfectly hardy here, have made a good, thrifty growth, and are now in bearing. Our late plantings of the hybrids have been largely Whitney's No. 20, and this leads them all in our judgment; and not in our judgment alone, as the American Pomological Society has pronounced it the best cooking and canning apple in the United States; and allow me to predict that in the not distant future the West will lead the East in the superiority of her fruits. Within the last week Iowa has won the two hundred dollar prize at the New Orleans exhibition, offered for the best display of apples, and I have already mentioned Minnesota carrying off the national honors the previous year. These straws would indicate that the West leads even now. We must concede the East, however, a greater number of good varieties than we can boast. But they had all the advantage of the system in vogue a half century ago of planting the orchard from seed, and each tree was a distinct variety. In this way they originated their Baldwin, Spitzenberg, Bellflower, etc. Later came top grafting, to perpetuate these desirable kinds. But usually there were plenty of branches of the original tree left to bear fruit and test its worth or worthlessness. The old home orchard in Michigan, to which my memory lovingly reverts, was started fifty years ago in a corner which is still called the nursery, some gnarled and knotty specimens of the original planting still remaining; and I wish some of our advocates of close planting could see their futile efforts to reach the sunshine, and the solitary apple that sometimes hangs on some topmost branch. When the trees were large enough to transplant, the best of them were reset in the orchard thirty-two feet apart. When my people came into possession of the orchard twenty years later, every tree was a seedling—a distinct variety by itself; and even now the most of them have branches that have escaped the grafter's knife, and bear fruit from the original stock. Under this system a great variety of good sorts was inevitable; but the universal custom now prevailing of root grafting, has changed all this. We take no chances, but we get no new varieties. But our horticultural pioneers know no such word as fail, and have risen to the emergency. It is of great interest to us all to know that apples are being scientifically propagated by the pollenizing of blossoms with a view to combining the desirable qualities of the parent trees in the seedlings raised from seed so fertilized. This process, of course, involves years of more or less patient waiting, but it has already produced fruits

of the greatest promise. Mr. Gideon, who is salaried by the State of Minnesota to conduct these experiments, claims that he has, as a result of such breeding, the best apple that has been produced since Adam and Eve left the garden of Eden. Mr. Patten, of Charles City, whose opinion carries great weight with it in horticultural circles, has assured me that he also has varieties of the greatest promise similarly propagated, and others are engaged in the same work, notably Mr. Pepper, of Wisconsin; ex-president Sias, of Rochester, Minnesota. Personally I have great faith in these experiments being of the greatest value to us, as I believe in science rather than chance; but each new sort must stand the inevitable test of years to see if it proves hardy of tree, impervious to blight, etc., and in the meantime we will plant Duchess, Wealthy, No. 20, Transcendent, and such hardy old varieties, and when these later sorts are old enough to have proved their worth, we shall have the best possible trees to top-graft them upon.

And now, fearing that I have concealed my ideas in the chaff of unnecessary words, allow me to pick them out for you. It is conceded by our successful orchardists that northern slopes are best for orchards, in moderately rich soil; few varieties; no unnecessary pruning—necessary to be done in late spring or early summer; no heavy wind breaks, if any protection, on south or west; no cultivation after July 1st, after which it is very beneficial to mulch to protect from summer drouth and winter freezing and thawing.

My apology for trespassing to such an extent on your time is that Dakota is being deluged by a flood of worthless trees from the South and East, accompanied by alleged instructions on how to raise them. The venders of this stock may be honest, but their business is to sell, not to raise trees. Their forte is talking, not in acting lies; and when the inevitable failure follows, the opinion will be well nigh universal that the apple is nature's forbidden fruit in this garden of Dakota, and I write this hoping to induce some modern Adam to use the same good sense in his orchard planting that he does in his other business; to first find out what he wants, then deal with some firm of known reliability to insure his getting it, then follow the teachings of those who have achieved success under similar conditions of climate and soil, and when, as the inevitable result, he sees his trees laden with luscious fruit, there will be no tinge of reproach attach to his satisfied comment—the woman tempted me and I did plant.

REPORT OF DELEGATE TO WISCONSIN MEETING, 1885.

BY J. S. HARRIS.

Hon. Truman M. Smith, President of the Minnesota State Horticultural Society:

Having received credentials from our worthy president as a delegate to represent Minnesota horticulture at the annual convention of the Wisconsin State Horticultural Society, Feb. 2 to Feb. 5, 1885, I started from home on the evening of the second, going by the Chicago & Northwestern Railroad, and arrived at Madison about midnight, making the journey from La Crescent in about six hours and by night. As it was midwinter and the ground covered with snow, the route would not have presented any very great attraction for a day ride.

Madison, the capital city of Wisconsin, has a population of about 12,000. It is in the midst of the "Four Lake Region," and is beautifully situated upon an undulating isthmus between Lakes Mendota and Monona, the two uppermost, and in situation and scenery is the most beautiful city in the State, and is peculiarly well adapted for a summer resort. It has wide, straight and regular streets, and many fine buildings. The capitol stands upon a slightly eminence in the centre of a square, well kept park of fourteen acres, wooded with native timber, is built of limestone, and from its dome commands a fine view of some of the best and most fertile farming lands in the State. In the city and vicinity are the United States court house and post-office building, the University of Wisconsin, Soldiers' Orphans' Home, and Hospital for the Insane. It is also well supplied with manufactories of various kinds, and shows an air of thrift that makes a favorable impression upon the visitor. The completion of the extensions to the capitol building, make it one of the finest state houses in the west; furnishing ample room for the legislature and State offices, rooms for the State library, Historical Society, State Agricultural Society, State Horticultural Society, and the accomodation of the annual meetings of the various other State associations; but it was found none too roomy to accommodate the people who assembled there during the session of this convention. The rooms of the State Agricultural Society contain a quite extensive library, including the

annual reports of most of the agricultural and kindred associations of America, and fine collections of grains, seeds, minerals, building rocks, and other articles of interest. In this respect the Agricultural Society is several years in advance of our Minnesota society. Agricultural conventions for the discussion of the various topics that have a bearing upon progressive farming and the publication and distribution of reports among the producing classes of our people, would give our society stability, become a great educating power, and hasten the development of the resources of the State, and it is the duty of our legislature to provide by law for the holding of such conventions and the publication of their transactions.

I repaired to the capitol at 9 A. M. on Tuesday, and found the rooms already filling up with representative men of every agricultural industry from every part of the State, all manifesting an interest that gave promise of a large and enthusiastic meeting. The leading horticulturists were on hand and busily engaged in setting out and arranging a fine collection of fruit. By actual count I found upon the tables 415 plates of apples of 73 varieties, 4 plates of pears, and 22 of grapes. The apples were, almost without exception, well grown specimens of their varieties, and showed that they had been carefully picked and skillfully handled. I have no hesitation in pronouncing the exhibition worthy of any state in the Union, and the finest one I have ever seen at the season of the year. Mr. Peter M. Gideon, of Excelsior, was present and looked over the exhibit with me, and I think will agree with what I have said of it.

The meeting was called to order at 10 A. M. by President J. M. Smith, of Green Bay, and the forenoon session was devoted principally to the discussion of the premium list for the next state fair, and the revision of the fruit and tree lists. I am led to infer that the Agricultural Society leaves the entire management of the horticultural department to the State Horticultural Society, only designating the total sum that may be offered for premiums. A resolution was adopted, requiring that hereafter all exhibits shall be placarded with the name and post office address of the owner before they can be passed upon by the awarding committee. In revising the apple list varieties were pretty thoroughly discussed. In the list of seven varieties best adapted to Wisconsin, Duchess, Wealthy, and Wolf River were retained without opposition. Pewaukee, Fameuse, Plum Cider, and Talman Sweet were also retained by a small majority vote; and the

discussion brought out that McMahon's White and Orange Winter are hardy and valuable varieties that will grow in favor as they become better known. The crab-apple list for general cultivation stands, Whitney No. 20, Gibb, Hyslop, Sweet Russet, valuable in the order named.

The strawberry list is Wilson, Crescent, Downing, and Windsor Chief for general planting, with Longfellow and Mount Vernon as fertilizers for the Crescent; Kentucky, Bidwell, Longfellow, Vick, Piper, and Manchester for trial.

The list of grapes for general cultivation stands Worden, Concord, Delaware, Brighton, Moore's Early; for unfavorable and frosty locations, Champion and Janesville.

Gregg, Miami and Doolittle for black, Cuthbert and Turner for red, were adopted as the most valuable varieties of raspberries for cultivation.

When blackberries were taken up, Messrs. Hamilton of Ripon, Tuttle of Baraboo, Hatch of Ithica, and others, gave brief accounts of their methods of management and experience with them, which demonstrated that a rich, somewhat sandy soil, is the best for them; that the Ancient Briton is the best and most profitable variety where properly managed; that as a rule winter protection is required for all varieties in Wisconsin, and that, where given winter protection and good cultivation, it is the most productive and profitable of the small fruits. The best protection is by laying down and covering with earth, straw, or corn stalks.

To lay down, begin at one end of a row, dig away a small quantity of earth, loosening it down to the roots, on one side of the hill with a garden fork—which is less liable to injure the roots than a spade—then step to the opposite side of the hill, place the foot at the crown and the fork in the top of the bush, push lightly with the fork and hard enough with the foot to bend the roots until the top is brought to the ground, and place upon it enough surface soil to hold it in place; then proceed to the next hill, using the same methods and bend in the same direction until all are down, when more soil may be thrown over them, and a covering of some other material. In the spring they are taken up by loosening the crust of soil with a four-tined fork, putting the fork under the plant and raising it up and pressing the dirt back firmly where it was taken from the roots.

The afternoon session was devoted, first to the election of officers; second, listening to the president's annual address. J.

M. Smith, of Green Bay, was elected president and Prof. Wm. Trelease, of Madison, secretary. President Smith, after a brief review of the work of the year, which showed that the society was in a flourishing condition and that its affairs had been managed with economy, gave an interesting detailed report of the Wisconsin exhibits at the World's Exposition at New Orleans. Mr. Smith had just returned from the exposition where he had been doing service as alternate commissioner and was familiar with the situation of affairs. He stated that the horticultural society had on exhibition about 1,000 plates of apples and was brought into competition with fourteen states, several of them noted as being the best apple growing states in America, and Wisconsin carried off twenty-four prizes, being a number more than was awarded to any other society. At the evening session the president's address was discussed at considerable length and many valuable points brought out in relation to packing, transporting and keeping fruits for such exhibitions. This was followed by the reports of Mr. Tuttle, Gideon, and your delegate, on the condition of horticulture in Minnesota. Mr. A. L. Hatch, of Richland County, read a paper treating on parasitic fungi and noxious insects which he showed to be more dreaded by the fruit grower than the severe cold of winter, and in very strong language condemned the practice of planting so extensively of Siberians and worthless varieties of fruit which in years of plenty would not pay for gathering and would be left upon the ground where it had fallen, to decay, breed insects and propagate fungus. He asserts that all of our trees are more or less affected in leaf, fruit, and plant by poisonous fungus, that makes its growth by absorbing the life of the plant, that the malady is increasing to an alarming extent and should be met with prompt attention by the horticultural society. This neighborhood and other parts of the State had been visited with the grape rot and mildew. He recommends raking up and burning all fallen leaves and litter as a preventive measure.

A business meeting of the society was held Wednesday evening to receive the report of the committee on articles upon exhibition, which was followed by a paper from the prince of genial horticulturists, J. S. Stickney, of Wauwatosa. He is the man who, while in the tree business, being asked for a list of varieties for profit in an orchard of one hundred trees, recommended ninety-nine Duchess and one Duchess.

The title of the paper was, "What I Know About Orchards," in which he went back to the early times in Wisconsin, and graphically described his experience as one mixed with "joy and sorrow"—sorrow generally predominating. In his last orchard fifty to seventy-five per cent of his fruit had been destroyed by the "apple gouger." He recommends grubbing out all worthless varieties, that only serve to harbor and rear insects, and concludes with the remark that he is "uncertain about knowing anything about orchards." The discussion following the reading of the paper revealed that the troubles of the fruit growers in Wisconsin are little if any less than in Minnesota.

The remainder of the session was taken up in tributes to the memory of the late secretary of the society, Mrs. H. M. Lewis, deceased; and it was ordered that volumes containing a suitable memorial page be bound in gilt and presented to the surviving members of her family.

Another session of the society was held in the forenoon of Friday. The remainder of the time was spent in joint convention with the State Agricultural Society and the Dairymen's Association. This joint convention of the farmers, from the beginning to the end, was a grand success. The ablest men of the State were there to read papers, make addresses, and discuss the most vital questions of the hour. Thursday afternoon was mostly devoted to the reading of papers by ladies, and the countenance which the ladies give these annual conventions is very encouraging. When printed the report of this convention will be a valuable addition to farm literature, and fortunate will be those who receive a copy of it.

I have omitted to mention that Mr. Tuttle showed before the meeting freshly cut cions from a number of his Russian variety of apples, and from the leading variety in general cultivation. In none of the Russians or the Wealthy was shown marks of injury from the unprecedented cold of the present winter. All other varieties were more or less discolored.

The secretary's report was an interesting document, in which he spoke of plans for enlarging the influence of the society by laboring for the establishment of numerous local societies throughout the State. The treasurer's report showed that the entire expenditures of the year, including secretary's salary and premiums at the summer meeting, were only four hundred and thirty-one dollars. Our overtures for exchange of transactions

met with favor, and the exchange will be made should the State grant them a sufficient number for the purpose.

Our thanks are due the president and the members of the Horticultural Society for the interest they manifest in the prosperity of the Minnesota society, for kind reception and entertainment of your delegate, and their efforts to make our visit pleasant and profitable; and also to Secretary Babbitt, of the Agricultural Society, for copies of their transactions for 1884.

REPORT OF DELEGATE TO IOWA.

BY G. W. FULLER.

The Iowa State Horticultural Society met at Atlantic, in the western part of the State. There was a full attendance of the earnest, active horticulturists of the society. They greeted your delegate heartily, and voted to reciprocate our courtesy by sending a delegate to our next meeting. They hold their next session at Des Moines. The following are some of the points in their proceedings of interest to us:

1. They voted to condense everything going into their printed transactions and to put in nothing not pertinent, so as to make their book of less size. They do not deem it wise to make a large book merely as a show.

2. They declared that the hardiest catalpa was not sufficiently hardy for the northern part of their State. This being true, it is not hardy in Minnesota.

3. They voted that the Russian mulberry is valuable only for thick wind brakes and hedges, and for furnishing food for birds.

4. Especial attention is being given to the different soils as affecting different varieties of fruit. The past severe winters in Iowa have clearly developed the fact that the same varieties of fruit have stood well on certain soils but have failed on others in the same locality.

5. Another point receiving attention is the amount of starch in the twigs of apple trees as determining the hardness of the tree. It is found that hardy trees like the Duchess of Oldenburg have a large proportion of starch in their composition, and it is thought that in this way we may determine the hardness of a tree without giving it years of trial.

6. A good deal of attention is given to the fruits and shrubs of northeast Europe. The varieties imported by the Govern-

ment have mostly failed, but Prof. Budd feels confident that much that is valuable for us in the Northwest will be obtained from his recent importations from the steppes of Central Russia.

7. The destruction of many orchards and many varieties of apples, like the Ben Davis, by the past two severe winters, is confirmed, and these varieties are dropped from their list. Whole orchards have in some cases been destroyed.

This society is justly proud of having taken the sweepstakes premium on fruit at the New Orleans Exhibition. They hold also, three silver medals of the American Pomological Society.

THE WEALTHY APPLE.

The *Rural New Yorker* has this to say in regard to this favorite of the Minnesota horticulturist: "This fine, iron-clad fruit, which has proved such a bonanza to the fruit growers of the 'cold north,' has spread along our northern frontier and into the adjoining provinces with wonderful rapidity, so that, although it is only about fifteen years since the original tree bore its first apple, bearing trees and even orchards of it are to be found at short distances all the way from Washington Territory to the gulf of St. Lawrence. The fruit itself has as few faults as any apple grown, being of good size, fine color, regular shape, a good shipper, 'very good' to the 'best' in quality for eating out of hand, and for cooking. In season, like the Baldwin, it varies from early fall to all winter according to the locality; but in the northern part of Maine, Vermont and New Hampshire, and in Quebec and New Brunswick it will keep until March or April without serious loss. The tree is a rapid and erect grower while young, very much resembling in the habit of and early and profuse bearing the Russian apple of the type of the Duchess. If allowed to bear when young the growth is checked and the trees injured. This should be avoided by removing all, or nearly all, the fruit, until the tree has reached two or three inches in diameter, which is usually about five years after setting."

[The following report was read at the Annual Meeting on January 22, 1885, and should have appeared at page 207.—SEC.]

STRAWBERRIES.

BY M. CUTLER.

Fellow Members of the State Horticultural Society:

By the request of our worthy president, I will attempt to give some of my horticultural experience.

Six years since, having read glowing accounts of the great profits of small fruit culture and having seen some of the beautiful cuts and pictures of new fruits sent out by Eastern nurserymen, being disgusted with wheat-raising, I made up my mind to embark in the small fruit business. So I sold a cow and invested twenty dollars in plants, sending to A. M. Purdy, Palmyra, N. Y., and directing them to be sent by freight. Had my orders been obeyed most of them would have spoiled, but they were sent by express and I had to pay ten dollars charges, a big sum to a poor farmer just after grasshopper times. Afterwards I learned that most of the kinds I bought were for sale at about the same price near home, and most of the risk and charges saved. "Moral: Buy plants near home when possible." The plants arriving in a dry time many of them were set too deep; a heavy rain soon followed the setting, washing the dirt over and smothering many of them. What remained made a good growth of plants, and the next spring the bed was white with blossoms, when a big hail storm came, cutting them all to pieces and pounding them into the ground, and I obtained but few berries. The fruit business began to look discouraging, still I thought I would try it again. So I took good care of the plants and by fall they looked well. Snow coming in October, I did not have them covered, and as part of them were on low land they were froze out. Part of the bed being on high ground and covered with big snow banks produced a big crop, so that I had enough for home use and a few dollars' worth to sell. Hope began to revive and the next spring I decided to set out one hundred rods more, mostly to Sharpless and Crescents. I set the plants three and one-half feet apart each way, and by fall they had made a rank growth, nearly covering the ground. I mulched them nicely with hay, leaving enough on in the spring to keep the berries off the ground, and

the following summer (two years ago) they produced a crop of berries that astonished the natives. People came from far and near to see the grand sight and get a taste of the luscious fruit. Lawyers, doctors, preachers, the aged sire, decrepit widow and blushing youth went into ecstasies over the beautiful sight, and many was the resolve made to set out a good strawberry bed, which I am pleased to say has generally been carried out.

Twenty-seven hundred quarts were picked from the piece, being at the rate of one hundred and thirty-five bushels per acre; which with plants sold brought about four hundred dollars.

The past season 1,400 quarts were picked from the same piece, mostly Crescents, the Sharpless making but few new plants and producing but few berries. Had they done as well as the Crescents at least 2,000 quarts would have been produced.

I have concluded that the Sharpless is not adapted to field culture. Last spring I set out over an acre, setting several new kinds, among them Piper, Manchester, Bidwell, Glendale, Jumbo and Phelps (or Old Iron Clad). Piper made a good growth of healthy looking vines not fruited yet. Bidwell a fine healthy looking plant with large, fine looking berries. Manchester badly rusted; will not set any more at present. Old Iron Clad, a large, rank, fine growing plant with large, fine looking berries, bids fair to do well here. Glendale does well as far as tried.

There is a good demand for berries here about the time or just after they are all gone. So I have been looking for a very late berry. Last spring, seeing the Jumbo (or latest of all) highly advertised, I sent five dollars for fifty plants, started them in the house and as soon as the ground was in good condition set them in the field. My object being to get a large number of plants, I picked most of the blossoms off. The few remaining produced large, meaty, well formed, bright scarlet, pleasant tasting berries. Being started in the house they ripened early. The plants made a vigorous, healthy growth, and I think I have at least 5,000 plants. James K. Rowley, of Illinois, says that from a plant he fruited he picked two nice berries the second day of August. He thinks it will be a great acquisition to horticulturalists. A. M. Purdy says it is from eight to twelve days later than any other and very productive.

Mr. E. Crandall, one of my neighbors and a member of our society, gathered over 2,000 quarts from about an acre the past season, mostly Crescents and Sharpless.

Mrs. Larabee, a widow lady of Glencoe, picked seventy-five quarts of the same kind from a small bed in her yard.

From personal experience and observation I have come to the following conclusions:

1st. That the strawberry is a natural production of our prairie. They growing in a wild state among grass and weeds, and rapidly taking possession of land that has been broken and allowed to go back to a state of nature.

2d. That properly cared for, the best kinds of strawberries are as sure a crop as corn or wheat. That the land should be plowed in the fall, and although plants may be set up to June first, the safest and best plan is to set as early as the ground is in good condition. That they should be set two by four feet in straight rows, and kept free of weeds. That more plants are lost by not pressing the earth firmly about the crown than by any other cause.

3d. That it is useless for a lazy man, or a man that thinks raising berries and garden truck a small business, to go into fruit-raising. The result will be weeds instead of berries. That horticulturalists as a class are not friends of tobacco and whisky.

4th. That it pays to put up fruit in a neat and tasty manner, and give good measure. That to be successful, the grower should be a good salesman.

5th. That the Crescent, if properly fertilized, is the most productive and profitable berry grown on the prairies of the West. It is also the earliest, the latest and hardiest grown in this vicinity, being the first to ripen and producing berries after even the Glendales are all gone.

6th. That the greatest pleasure and reward a horticulturalist, with a family of children, receives is to see their sparkling eyes and smiling faces as they grasp the luscious fruit, and their better health by the use thereof.

In conclusion, I will say that I received the request to prepare this paper but four days ago, and in the interim a young horticulturalist has arrived in the family; which facts account for the crude and incomplete condition of this paper and my absence from your meeting.

FOSTER THE BIRDS.

BY A. W. SIAS.

Webster says foster means to feed, to nourish, to support, to bring up. And that is just what I mean when I say foster the birds. Set for them the June-berry, so as to have something

sweet and early; they are very fond of sweet fruits. The Juneberry, both standard and dwarf, can be had in this State for the digging, and are perfectly hardy. Then offer them some of the sweetest cherries you can muster, think perhaps the Osterheim would fill the bill. Then pick for the mildest flavored strawberries. The Turner raspberry is sweet and good and they will not refuse a share of these; set them plentifully. Next the blackberry; give them a good show of Snyder, Stone's Hardy, Ancient Briton and Wilson, Jr. Now comes the grapes, and if there is anything a bird delights in it is the Sweet Delaware grape; plant liberally of the Delaware. And so let the sweetest fruits follow in close succession from the earliest to the latest, and do not fear about getting anything too good for the birds, for that is impossible. "The laborer is worthy of his hire." We have told how to feed the feathered songsters, and now how shall we best protect them from the cold and storms? I know of nothing that will please or protect them better than an abundance of evergreen trees; shorten in all the outside branches, so as to thicken them up, and so make a perfect shelter and protection. Place bird houses and boxes about in the deciduous trees, and do all in your power to convince the birds that you are their *true* friend. It is estimated by entomologists that we have some 500,000 species of insects—a much larger number than of all other classes of animals combined. Many are microscopic, and the loss sustained by their secret workings are beyond computation. There was a move made at our last annual meeting, looking to the appointment of a State entomologist, this I most heartily approve of. But even if we succeed in this very laudable undertaking, it will not do away with the necessity we are under to foster the birds. It has been estimated by competent judges that insects destroyed over one-half the fruit crop in Minnesota the past season. This shows our subject to be one of no trivial importance.

FRUIT GROWING IN THE RED RIVER VALLEY.

The secretary, while attending the State Dairymen's Convention at Fairbault, in March, 1885, met there Mr. F. J. Schreiber, of Moorhead, Minn., and by request a brief description was given of his plans for fruit raising in the Red River Valley, which may not be without interest to fruit growers of other localities. His farm, which consists of over 2,000 acres, is

situated about three miles southeast of the city of Moorhead, in Clay County, in the very midst of the rich, level prairie lands of the famous Red River country, which produces such wonderful yields of small grain; here he has planted several thousand trees as an experiment largely, but with every promise of success. His fruit trees consist of the hardiest varieties, selected from the nursery of Underwood & Emery, of Lake City. He has a dozen rows of apple trees, a quantity of native plum and some twenty-two hundred Russian mulberry trees. He protects his orchard with rows of Scotch and Norway pine, and tamarack, set in zig-zag shape; while farther back, some one hundred and thirty-five feet, is a double row of arbor vitæ, for a hedge or windbreak; all arranged so as to form a protection upon three sides for farm buildings and yards. The trees are further protected with corn-stalks and leaves of the amber cane. The trees have been set two years, and Mr. Schreiber says his success has been very satisfactory thus far. He is also interested in stock raising, has forty head of Percheron horses, and sixty head of cattle of Short-horns and Poland Norfolks of England.

DRAKE SEEDLING.

Mr. J. P. Andrews, of Faribault, gives, at our request, a brief description of an apple which he is propagating, originated in Rice County, known as the Drake apple, which promises to be of considerable value in favorable locations. This variety is supposed to be a seedling, and was raised upon the farm of a Mr. Drake, formerly residing near Northfield. The apple is of the size of the Duchess, rather tart in flavor—a good pie apple; season early winter, keeping into December; it is a nice nursery tree, and stands about the same as the Haas as to hardiness; a good bearer. Mr. Andrews is growing this with many of the leading varieties of apples and hybrids in his nursery near Faribault, where he has some 75,000 trees. He makes a specialty of the following: Wealthy, Duchess, Tetofsky, Orange, Early Strawberry, Maiden's Blush, Virginia, Beach's Sweet, Gen. Grant. Is also testing some fifty of the Russian varieties. He believes that it is desirable with fruit growers to keep pretty close to the hybrid varieties, planting very few of the standards, except in favorable locations.

FROM WRIGHT COUNTY.

Hon. Truman M. Smith:

In the St. Paul weekly *Volkszeitung* of the twenty-eighth of January, 1885, I read with much interest the reported proceedings of the Horticultural Society meetings, particularly the discussion about the culture of fruit trees. I do not think, however, that the information elicited covered ground enough, and as I have made the subject a study in Germany, and had ten years practice, I take the liberty to contribute what I believe will be useful additional information. For instance, chickens are not effective in ridding trees from caterpillars, for the reason that they cannot always get at them at the right times to prevent their doing injury. One of the best methods to get rid of these pests is, to smear a wide, thick girdle of tar around the trees about two feet above the ground, in the fall, and renew it until winter sets in. The female caterpillar, which cannot fly, in attempting to crawl up the tree to deposit her eggs on the leaves or the soft bark of the young twigs, will thus stick fast in the tar and die. The young insects which do the injury are those that hatch upon the upper branches. They at once attack the young leaves and twigs in the spring.

According to the instruction I have received, and this is confirmed by my experience, the splitting of the bark of trees is occasioned neither by the severe cold of winter or the intense heat of summer, but by early spring frosts. The first warm days start the trees growing, and the frosts of succeeding cold nights cools the bark to freezing; then comes the next day's hot sunshine, melts the frost quickly and thaws the bark. The rapid contraction and expansion act as a bruise, the bark becomes dry and preventing the circulation of sap, of course loses its vitality and is split by the force of the growing wood within.

The proper method of dealing successfully with this evil, is to cover such exposed portions of the tree in the fall, and remove such protection after there is no more danger of heavy frosts in the spring.

If one desires to save a tree that has been injured thus, the best plan is to cut away the dead bark and wood down to, but not deep enough to injure the sound wood, and cover the wound with tree wax (grafting wax). If we would grow the finest table apples, we must take great care of them in the start, and my plan is to set them in the nursery, when they are from nine

inches to a foot high, in rows from three to three feet six inches apart. The cultivation of the finest varieties of fruit is always most profitable.

I write these few lines in the interest of farmers generally, but especially for the society of which you have the honor to be president, and if you desire to have these published I shall not object. I shall even hold myself ready to answer any further questions about the cultivation of fruit trees that may be asked of me, to the extent of my ability.

I am, with high esteem, yours, etc.,

T. DILLENBURG.

St. Michaels, Wright County, Minn., Feb. 4, 1885.

Mr. Smith:

The above is a true rendition of Mr. Dillenburg's letter, and permit me to add that the cause he assigns for the splitting of the bark of thrifty growing apple trees is, I think, true, and the preventive he suggests effective. I observed an instance some years ago, of a young tree, the branches of which had been covered partially during the closing month of winter with some dry grass that fell upon it undesignedly when the trash, raked up in the yard was being thrown over the fence, close by, and was not removed till after the foliage was well grown. It alone, of three trees in the yard, was not injured in the way described. I attributed the disease to coagulation of the sap under the bark, by the sudden and severe cooling of the frost at night, and its fermenting because of rapid heating in the morning. The raising up and splitting of the bark is the consequence of the confined gas seeking a vent to escape.

I take it that Mr. Dillenburg would like to have you publish this letter in the *Volkszeitung*, of this city. Excuse my delay in performing the service of furnishing translation for you.

Yours truly,

H. H. YOUNG.

REPORT FROM B. TAYLOR.

As one of the managers of the society's experimental stations I have to report that the cherries and plums failed to grow; the late day in which they were grafted being the probable cause. I was confined to my bed with sickness when the cions were re-

ceived was the cause of delay. The two kinds of apples, Wright's Sweet and Wright's Belleflour, grew finely, being top-worked on fine stocks; but I am sorry to report them badly injured by the winter, being very nearly, if not entirely, dead.

Forestville, March 31, 1885.

CORRESPONDENCE.

F. G. Dewey, of Esmond, Dak., writes under date of Feb. 10, 1885: "We have no suggestions at present to offer that will be of interest; but will state that there is a small striped bug working on the cottonwoods in Moody and Brookings counties, and they have killed the best groves ten to twenty feet high, but did not seem to work upon other timber on tree claims."

W. F. Eastman, secretary of the Dakota Horticultural Society, writing from Huron, under date of April 1, 1885, in reference to an exchange of reports, etc., says: "There are many things common in the horticulture of Minnesota and Dakota, although our climatic conditions, especially in respect to moisture and hot, drying winds, are much different."

GERMAN AGRICULTURAL AND HORTICULTURAL SOCIETY OF RAMSEY COUNTY.

Following are the names of officers of Ramsey County German Agricultural and Horticultural Society:

President—F. W. Muller.

Vice President—Herman Christoph.

Secretary—Adam Bohland.

Financial Secretary—Ernest Venzke.

Treasurer—E. F. Lemke.

Executive Committee—Carl Bund and John Lorenz.

HENNEPIN COUNTY HORTICULTURAL SOCIETY AND GARDENERS ASSOCIATION.

From Minneapolis Weekly Tribune, Feb. 26, 1885.

We here give place to a somewhat extended report of the discussions had at the meetings of the local Horticultural Society in Hennepin County, during the past few months. The various topics considered are timely, many valuable suggestions are given, and it seems to us desirable that the record of the proceedings, although somewhat lengthy, should be preserved in this permanent form.

DISCUSSION UPON STRAWBERRIES.

The regular weekly meeting of the Hennepin County Horticultural Society was held at the seed store of Northrup, Braslan & Co., on the afternoon of Saturday, February 21st. There was a full attendance, and much interest was manifested. These weekly meetings of the society and the attendant debate are productive of much good, and their influence is beginning to be felt among the farmers of Hennepin County.

The meeting was called to order by the president, M. Pearce. He gave notice that if there were any present desirous of becoming members they could do so by paying the usual fee of twenty-five cents. He also stated that at the next meeting copies of the State Horticultural Society's report would be ready for distribution, each member being entitled to a copy. The new report will be out early in the coming summer. Several persons paid the fee and became members.

The secretary, J. E. Northrup, then read the minutes of the last meeting, and they were approved.

The president then announced that the subject for discussion before the meeting would be "Strawberries."

William Lyons, of Richfield, read a paper, of which the following synopsis contains the more important points:

MR. LYONS' PAPER.

My method of preparing a strawberry bed is as follows: I select a good piece of land, plow in the fall and again in the spring, making it as mellow as possible. Then I mark it one way with a corn marker four feet apart. I then start a man with

a spade making holes the necessary distance apart, which is from fifteen to eighteen inches. He can make holes for four planters, each being provided with a tin pan and about fifty plants, and each straddling the row, holding the plant in the left hand on one side of the hole, as near level as possible. The fresh earth which was thrown out is now brought back firm about the plant. In this way I can nearly always have moist earth around the plant. This is not as fast as some other modes, but it gives me better results, and I have tried several methods. I use one-year-old plants, rejecting everything with black roots. Trim off old leaves and runners, and keep the plants moist. Where blossoms appear, cut off so as to let the plants get strong.

I cultivate with a horse, keeping the ground clean the first year. The second year no cultivation is given, but the weeds are cut out. I renew by planting a new patch every year, letting each one bear two crops of fruit. I have let good, thrifty patches bear a third crop, and got more money from it than I could get from any other crop. Considerable land is required and much work, but the results are generally satisfactory.

Early in winter, when the ground is frozen hard, is the time I generally cover for winter protection. There is no danger of hurting the plants at this time. The material for mulching should be all ready at this time, for it sometimes happens that a cold wind does great damage in a few days. Marsh hay and oat straw make a good mulch. Any straw free from foul seed will do. The object of mulching is to protect the plants from thawing and freezing during warm spells in winter, and if left on in summer will keep the berries clean and free from sand. I prefer level land with slope enough to drain it. Southern or eastern exposure is best, but I should never discourage the farmer from planting for his own use on a different site, for I have not yet seen a farm on which a good crop of potatoes can be grown that could not be made to grow strawberries of some variety. Different soils are adapted to different kinds of strawberries. It is desirable, therefore, that if those planted in the past have not done well, other kinds should be tried. My advice to young men going into the business would be to buy fifty plants of each leading variety, and plant them in a specimen bed. In no other way can they become posted on the merits of the different varieties. It is folly for a man to advise about varieties he has not tested on his own place.

You may ask me what varieties to plant. My own experience,

which is confined to this part of the State, is too limited to answer this question, even for my own locality. The old advice, look around before planting, and select those kinds that do best in your vicinity under similar conditions as regards soil and exposure, is the best I can give.

The following paper was then presented by Mr. C. L. Smith: *

MR. SMITH'S PAPER.

As soon as the ground will do to work in the spring, plow deep and harrow thoroughly. Secure some plants of a variety that have perfect blossoms and are adapted to your soil. Have the plants taken up with all their roots and so handled as to preserve the roots fresh and cool until ready to set them, and the earlier this is done the better. I carry the plants in a pail of muddy water. Make a hole six or eight inches deep and straighten the roots down in the hole their full length. Leave the crown of the plant just even with the surface of the ground, and press the earth firmly against the root its entire length. I do not water, but there is no objection to using a little water in dry weather. It is a good plan to shade for a day or two with a bit of hay, straw, or a shingle. For the garden, plant in rows three feet apart, and eighteen to thirteen inches apart in the rows, eighteen inches for Wilson and thirty for Glendale. Don't allow a weed or spear of grass to grow, and keep the ground mellow. If there should be any blossoms the first season, pick them off. When runners start, if you wish matted rows, throw them along the row. In two weeks cut the ends of all runners. Be careful not to get your plants too thick. If to be grown in hills, cut off all runners. After the ground freezes hard enough to hold a wagon, mulch them with cornstalks, which is undoubtedly best, but marsh hay is good, as is straw. If you use hay or straw, be careful not to get it too deep, but just barely enough to cover. If sandy land, rake the mulch between the rows in the spring and leave it. If clay land, rake the mulch entirely off and cultivate thoroughly twice or three times, but be sure to mulch heavy between the rows before dry weather comes. If in hills, keep the whole surface mulched between the hills. The hills can be renewed every year or two, by allowing one or two runners to take root half way between the hills, and whenever they are well established dig out the old hill. Strawberry plants can be handled very easily and are nearly certain to live early

in the season, but as the season advances more care is required and a larger percentage is apt to die out. The earlier they are set the stronger they will be after they commence to grow. They heat very quickly if tied in bunches or packed in bunches, and cannot be sent any distance. The grain of wisdom contained in the last sentence cost me money, and I am always going to remember it. Another thing I am not going to forget is that grass kills more strawberry plants than frost and worms. It will even run out Crescent seedling if given half a chance. Look out for it and shoot it on the spot whenever it appears, for if you don't it is bound to capture the strawberry bed.

One man has succeeded in raising fine crops of Wilson's year after year by covering the ground with straw about three inches deep. Then he just parts the straw sufficient to set the plants. When the runners begin to put out he digs through the straw, covers the tips until he has the plants as thick as desired, then allows them to run on top of the straw, where they soon dry up, and the strength goes to the rooted plants. This is repeated year after year, the straw being renewed as needed and the old plants thinned out.

My conclusions from experience and observation are that the best method for field culture is the matted row system, mulching with cornstalks or marsh grass or straw. For a small garden, the hill culture or the straw method is undoubtedly the best. To produce good fruit the plants must have air, light and an abundance of moisture, the ground must be kept free from weeds or grass, and the plants must not be too thick, and the pistilate varieties must be fertilized.

The strawberry leaf roller is a formidable enemy, but one that can be conquered at a profit of about \$12 per acre. My invention is this: Early in the spring procure about six hens for each acre of strawberries, the meanest, cheapest, scrubbiest you can find; they will keep off all strawberry worms, eat up their eggs, and in fact clear the ground of all insects; and your chicken coop will pay you a handsome profit.

President Pearce then stated that he had hastily prepared a few suggestions on strawberry culture. His essay was substantially as follows:

MR. PEARCE'S PAPER.

Since the introduction of the Wilson strawberry, hundreds of varieties have made their appearance, all claiming some special

merit. If one hundred plates of the best varieties were placed before you with plenty of sugar and cream, with a good appetite and a healthy stomach, you would pronounce them all good. It is not the berries, as a general rule, possessing the best qualities that meet a ready sale. Freshness, size, color and form are what sell berries. Every market grower should become acquainted with all the best varieties, and then select the hardest, most prolific, high colored, and those of good form and large. In making selections, due attention must be paid to the distance you are from the market. If near market and the fruit can be sold at once, or in a few hours, soft varieties can be selected. But if at a distance from market, varieties of a firmer texture must be selected. Every grower should select both pistillate and hermaphrodite varieties. If this be done with care and knowledge, color, form, size, and firmness can be improved. For sandy, loose soil, near market, the Crescent seedling and Downer's Prolific would be good selections. The size, color and form of the fruit of both varieties are good and the crop would improve the fruit on the Crescent. For heavy soil, Wilson, Glendale and Seth Boyden hermaphrodite, Crescent seedling, Windsor Chief, and Manchester pistillates.

The fruit of all these varieties is large and firm and color good. I would arrange on the ground as follows: Setting from a foot to fifteen inches one way, and thirty-two inches the other. I would plant two-thirds of my ground to Wilson, Glendale and Crescent seedling, in the following order: First row, Crescent seedling, next row Wilson, next two rows, Crescent seedling, next row, Glendale, and so on, till two-thirds of the ground is planted, closing with one row of Crescent; then one row Windsor Chief, then a row of Glendale, then two rows Windsor Chief, and so on, till one-half the remaining third is planted, stopping with one row of Windsor Chief; then one row of Manchester, then a row of Seth Boyden, then two rows of Manchester, and so on till the remaining half third is planted. The last two varieties will make fancy berries.

Level ground, as far as possible, should be selected for a strawberry bed, not subject to wash or overflow. The plants, the first year they are set out, should be thoroughly cultivated with a light cultivator and kept clear. As soon as the plants begin to vine, run the cultivator but one way and carry the runner lengthwise on the rows and let them form thick, matted rows, and keep, by the use of the cultivator, an open space of a foot or fif-

teen inches between each row. If the soil is light and sandy, mulch late in the fall; if heavy, mulch in the winter on top of the snow, about one and one-half inches deep, with straw or marsh hay. Let it remain till late in the spring, and then rake the most of it between the rows, and let it remain there. The second year it does not pay to cultivate. Pull out the weeds, and after the berry season is over, plow up the bed, and set a new bed every other year. All strawberries require good soil. For the Wilson it should be very rich, and in all cases water will do wonders in production. Strawberries are very easily grown, but require good judgment in selecting the location and preparing the soil. They can be made very profitable. Three hundred bushels per acre we would not consider an unusually large crop. The record of the Crescent is four hundred and sixty bushels per acre. The profit in growing strawberries is not to spread over too much ground. Get from one acre what is usually got from five, and better fruit, and much less expense of picking.

GENERAL DISCUSSION.

At the conclusion of Mr. Pearce's paper, a general discussion of the subject of strawberries was entered into.

Mr Lyons said: I have raised the Countess and Downer's Prolific. They look very much alike, but are two different strawberries. Some people say they are the same. The Countess blighted with me two years in the last fifteen. I had Downer's Prolific in the same field, and there was no blight with them at all.

Mr. Isaac Gilpatrick. I have always planted in hills. I would not plant any other way. Last year I had one-tenth of an acre, very badly taken care of, and got forty to sixty quarts a day. I got everything too close together, and the consequence was that I didn't get a good crop. I claim that I could take the same ground and get eighty quarts a day. I picked twenty-six days. My ground was well prepared sandy loam, gravel subsoil, well mulched with straw manure, and every runner taken off. I raised berries for my own use, and therefore didn't take care of them as I otherwise would, but I can take the same ground now and get good returns from it. I never raised anything but the Wilson until last year. I set them all too close, and lost nearly one-half by it.

Mr. Pearce. What can be grown per acre by your system?

Mr. Gilpatrick. I should not think it a very large crop to raise four hundred bushels. I should not expect to get less than that. I had a patch last year that averaged more than six hundred bushels per acre. The president of the State society said that it was the best piece of ground he ever saw in strawberries. I think you are all mistaken about what it costs to keep strawberries in the hill. And that's not all. If you keep strawberries in the hill you can have a crop every year. As soon as the crop is ripe you can have a crop started between, and they will bear a good crop the next year. The old plants can be pulled out. I raised berries on the same ground ten successive years, and then lost a crop by grubworms. My experience would teach me to plant eighteen inches between the hills and two and one-half feet between the rows. Prepare the ground just as for corn. I wish to say that my experience is very limited except with the Wilson. If you have the strawberries mulched you won't hear about their drying up. Put only one plant in a hill; if more than one are planted in a hill, they will injure each other. Raising Wilsons in the hill is new to me. Mulch with anything, straw manure, or even with shingle shavings. I should prefer straw manure. This don't apply to wet land, only to sandy loam. I mulch as soon as I set out the plants. Set the plants early in the spring — in April.

In answer to the question whether the runners will take root from the mulch, Mr. Gilpatrick said they would not if it was good straw.

On being asked what kind of berries he would recommend as best for keeping late in the season, Mr. Gilpatrick said the James Vick was the best he had. They lasted about three days after they were ripe. The Glendale is very good for that also.

Mr. Pearce inquired if Mr. Gilpatrick did not think that where persons were raising small quantities it would be a good plan to use potted plants. Mr. Gilpatrick said he thought so. Mr. Pearce said he had seen Mr. Gilpatrick's strawberries, and he was positive that nothing like them had been produced in the State.

Mr. Gilpatrick said strawberries are not half as liable to winter-kill if well mulched: He never lost plants that were mulched.

A member said that he did not think it necessary to have potted plants at all when they are set out late in the season.

Mr. Pearce. There is just this in potted plants: As soon as the plants begin to run in the spring you can set the potted

plants. I have been using potted plants myself. By that means I can get them out very early, and when fall comes I have got great big plants.

Mr. Gilpatrick said that if they were put out early a large crop could be had the next year.

Mr. Pearce. I think there is a great advantage in potted plants. They are stronger; and the best berries in this market have been from potted plants. After you get started it is an easy matter. I just put the pot down. Eastern growers are almost universally using potted plants. One-and-a-half-inch pots are large enough. I think I can pot 1,000 plants in two hours. Hereafter I shall use pots altogether. Of course where you are setting out acres it is a different thing.

Mr. Smith. Should plants be cultivated in the spring?

Mr. Gilpatrick. Not in sandy soil, but in clay soil it is necessary. On sandy soil just level the mulch, and do not stir the soil. Be careful about mulching too early. I have known my neighbors to lose a crop once in two years by mulching too early.

Mr. Pearce said the best crop he ever grew he mulched in the winter when the snow was a foot and a half deep. He put the straw on just before Christmas. He said that his experience was that the cold spring weather was what kills the strawberry plant. He said that people were punching him up for plants at a time when he had to tell they were covered with snow. Strawberry plants can be kept in that way almost always through this freezing and thawing.

Mr. Gilpatrick said that if the winter is open the plants should be covered.

Mr. Smith said that if they had not been covered up with snow by December 10th, then they must be covered up with something else.

Mr. Pearce said they must be covered lightly. An inch of straw is enough. The trouble begins when the snow goes off.

In answer to a question as to how straw and horse manure would do for a covering on heavy land Mr. Gilpatrick said it would do for a covering, but would not do for mulching.

A remark was made to the effect that if manure was used for mulching there would be plenty of leaves but no fruit.

Mr. Pearce said that we should breed strawberries in the same manner in which we breed animals. We should reject everything that is bad. In selecting old varieties try to get nice colored berries and cross them. By crossing you can get better

berries. We can have handsome berries, and raise berries just as we please, by crossing the different varieties. If a strawberry has a good form it will sell. It is the form and color that fascinate.

Mr. Smith. My experience with the Seth Boyden was that they ought to be good, for the berries were very scarce on the vines. I gave a man two dollars for one hundred Seth Boyden plants, and put them out in hills three feet apart. I was going to have something nice. I got from three to five berries from each hill that were half as large as hens' eggs, but they cost me from three to five dollars a quart; and only one got ripe at the same time. From these vines I would not get over three quarts in any one day. But they were very nice; and for the last few I got thirty cents a quart. I would not advise anyone to plant the Seth Boyden.

Mr. Lyons said the Seth Boyden did nothing for him. The berries were few and far between.

Mr. Pearce thought the Seth Boyden was adapted to certain kinds of soil, and that there were localities where they would do well.

In answer to the question as to how far plants could be fertilized, Mr. Pearce said that when the fertilizing varieties were in blossom, and the weather was favorable, the air became impregnated, and it spreads and will go hundreds of feet. Plants must be fertilized or they won't amount to anything.

The subject of mulching being introduced, Mr. Lyons said: I mulch for field culture. I generally put it on just about the time the ground is froze; but there have been times when I did not get around to it soon enough in a very dry winter when there was a very hard frost lasting for three or four days.

I mulch the first year in my mode of cultivation. The second year I don't generally mulch at all. The plants take care of themselves.

A member asked whether or not it would help the plants to manure with fine manure in the fall.

Mr. Lyons. I got, in the fall of the year, some fine manure and covered the patch. The next season was dry, and I had a splendid crop of berries. The next season I served five acres the same way, but got all vines and not much fruit.

Mr. Smith had the same experience. He thought it was not safe to manure.

Mr. Gilpatrick said a good covering was to put on corn just

as it grew, the heavier the better. One thickness was sufficient. It will take ten or twelve tons to the acre to cover properly. It will not take half as much fine fodder.

VARIETIES RECOMMENDED.

Mr. Lyons recommended, for sandy soil, the Countess or Downer's Prolific and the Crescent seedling, planting one-third Countess and two-thirds Crescent. That is, one row of Countess and two rows of Crescent. The recommendation was adopted.

Mr. Pearce said there was some doubt as to whether or not the Countess was identical with Downer's Prolific. Downer's Prolific is probably the Countess modified.

Mr. Smith recommended, for general cultivation in heavy soil, the Wilson or Glendale and Crescent seedling, planting one-third hermaphrodites and two-thirds Crescents; that is, one-third Wilson or Glendale and two-thirds Crescents. In other words, we plant the Wilson and Glendale for fertilizers. The recommendation was adopted.

Mr. Smith recommended for trial on all soils the old Ironclad and James Vick for general cultivation, and the recommendation was adopted.

Mr. Perace urged a more extensive cultivation of the strawberry. He said that over half the berries consumed were raised in other sections of the country.

Considerable discussion followed regarding the merits of the Manchester, Minnetonka Chief, Jersey Queen, Iowa Prolific, and some other varieties.

The subject for discussion at the meeting next Saturday was then agreed to be "Raspberries."

MEETING OF FEBRUARY 28, 1885.

Minneapolis Tribune, March 5th.

THE RASPBERRY AND ITS CULTIVATION.

The regular weekly meeting of the Hennepin County Horticultural Society was held at the seed store of Northrup, Braslan & Co. on Saturday afternoon, February 28th. There was a larger attendance than at the last meeting, and the discussion was spirited, and much valuable information in regard to the cultivation of the raspberry was elicited.

The meeting was called to order by the president, and the minutes of the previous meeting read by the secretary. Mr. Pearce said that he had recommended one and one-half inch pots for strawberries, but wished the minutes to be changed so as to read two-inch pots, that being a more suitable size.

MR. PEARCE'S PAPER.

President Pearce then read a short paper, the main points of which were as follows:

In growing raspberries for home use and the market it is very essential that we should be well acquainted with each variety. They should be early, medium, and late, hardy, prolific fruit, large, and of good color and quality. He would not recommend the dropping a good hardy market variety, such as the Philadelphia, Mammoth Cluster, and other varieties, on account of the fruit being second class. More than two-thirds of the people who buy fruit select that which is the best looking regardless of quality, but not so with all. Some have a cultivated taste and always buy certain varieties of berries if they are in the market. Consumers of berries, as a rule, like a change, and it is well for growers to have them. It is the early berry that brings the high price. The first that come to the market sell for from twenty-five to thirty-five cents per quart, and those that come ten or twelve days later from fifteen to twenty cents per quart. Mulching, to some extent, will increase the size of the fruit, but will make them ten or twelve days later than the same varieties that are frequently cultivated and not mulched.

I know of no variety that is adapted to this climate that is as early as the Turner. The fruit is of good size and a bright scarlet color, firm, and of excellent quality. The Philadelphia is an old variety, hardy and very prolific, and if not frequently cultivated or mulched the fruit will be small and imperfect after the first or second picking. The fruit is soft, of a dull brown color, and second or third in quality, but is grown in large quantities, owing to its great productiveness. It ripens from a week to ten days later than the Turner.

The Cuthbert is growing rapidly in favor. The plants for a number of years have proved very hardy, prolific, and sometimes long in bearing. The fruit is very large, of good quality, firm and fascinating in color. They begin to ripen a few days later than the Philadelphia, and sell readily.

Among the black raspberries the Doolittle is the earliest, and as hardy as any known variety.

The Mammoth Cluster in hardiness ranks second, with large fruit and of fair quality.

The Gregg is the largest and latest of all the blackcaps. The fruit, owing to its large size and great beauty, is very attractive. Owing to its late growth it is very apt to kill down from a third to a half unless planted in a favorable location. It is advisable to grow a few plants of this variety.

In growing raspberries for profit, aside from cultivating and mulching, due attention must be given to thinning out, pinching back, and cutting off in the spring all diseased stocks or wood. When the new plants of the red raspberry attain a height of four and a half or five feet the leaders should be pinched back. This will stop the upward growth and make the plants stocky. In the spring when the new plants start all should be destroyed except two or three in the hill, and they should be a little apart. In the spring all injured or dead wood must be cut away without fail. If not the fruit will be small and poor.

There is no profit in growing small berries for market; the extra cost of picking and the reduced price of selling will take all the profit. For that reason we recommend planting them a little further apart than is usually done. This gives the plants an abundance of air and sunshine, which makes the fruit larger, firmer, and of better color, and the yield per acre is equally good, if not better, than when they are closer. There are several varieties that I have not spoken of that it would be well for the society to recommend for trial. The soil for raspberries should be dry and moderately rich.

The president said that he had only covered a few of the most prominent points of raspberry culture, merely an outline. He had laid a foundation, as it were, and the subject was now open for discussion.

GENERAL DISCUSSION.

The question being asked how far apart plants should be set and how many canes should be left in a hill, Mr. Chandler said that his method was to put the plants four feet apart and six feet between the rows. He only left four or five canes in a hill, not very often more than that.

Mr. Pearce. I would say that it is best to put them a good

distance apart. I would put them five feet one way and six feet the other, thus giving plenty of room for cultivation. My experience has been that I can do just about as much by cultivation as by mulching, and in cultivating I produce berries a good deal earlier. If they are mulched they will be much later. A great many people mulch their berries, and the result is that the late varieties are ripe at about the same time as blueberries and blackberries. As a general rule I don't think there is anything gained in mulching, although you may get larger and finer berries. But that is a question that we differ on. I cultivate from the time they commence to grow. Just as soon as vegetation starts, when the buds begin to swell and the new shoots to start up, cultivation should be commenced. The shoots must be destroyed as soon as possible, for they take from the bearing power of the plants. Destroy them and throw the whole strength into the plants. I think it better to destroy all plants except those that you want for fruiting next year. Select two or three of the best plants and let everything else go. After they begin to bear I would go through them with a cultivator and cultivate them all the time. As good a grower as I know follows that plan. Cultivation is better than mulching, for mulching holds them back. They have got to have moisture, and if they are close together they don't get it, but they will if placed further apart.

Mr. Dean. I have not had much experience in cultivating raspberries, but have a plan marked out that I thought of following. I want to get some light on the subject. I have a patch of about two acres, and last summer I mulched them very heavily with old hay, cornstalks, straw, and anything I could find. I didn't allow anything to grow except the new shoots. After berrying I took a plow and plowed against the row on each side. This spring I intend to cultivate two or three times with a shovel-plow. I would like to ask if anyone has had any experience that way. My soil is quite sandy.

Mr. Pearce. I think Mr. Dean is right. I think raspberries should be cultivated in the spring, plowing deep and leveling the ground as soon as possible. If you are after early berries, continue the cultivation without mulching.

Mr. Gilpatrick. I think his plan is a good one. I would prefer his plan to anything I have heard.

In answer to the question whether or not there was any danger of getting the land too rich, Mr. Dean said there was no danger if too many sprouts were not allowed to grow.

Mr. Chandler. I do not mulch my berries until a week before picking them, and then mulch them heavily.

The president asked Mr Chandler to state what he did in regard to thinning the plant out.

Mr. Chandler. I set my raspberries just as early in the spring as the ground can be worked. As soon as they are set out, I go into them with a cultivator, and keep cultivating them right along. When they get about two feet high, I pinch them back, and let them branch out two and a half feet. I leave about four stalks in a hill. As for suckers, go around them with a sharp hoe. Don't let them grow at all. I have the Philadelphia and Turner. The Philadelphia bore the most fruit, but the Turner gave the largest size. The difference in the price of these two varieties was from two to five cents.

The question being raised as to which was the best berry to raise, Mr. Pearce said that his experience was that there was more profit in the red than in the black. He believed that every market grower should raise both kinds, for the reason that if only one kind is raised customers are likely to ask for the other and not be able to get it. People get tired of one kind and want a change.

The question was asked what is the best blackcap to raise. Mr. Chandler didn't know. Mr. Busse and Mr. Lyons never raised them.

Mr. Gray. I have raised them, but don't intend to any more. I had the Doolittle and Mammoth Cluster, I fruited them four years, pulled them up and raised a crop of turnips, and got more for the crop of turnips than for the raspberries.

Mr. Pearce. I think, if you will take the Gregg raspberry and cultivate them, and keep them in rows, and dig the dirt out from the roots, and bend them over till the stalks reach the ground, and cover with dirt, you will raise just as nice black raspberries as you ever saw, and plenty of them. A gentleman at Long Lake raises an immense quantity of them and gets the highest price in the market.

Mr. Roberts. I have raised the Doolittle a number of years, and had good crops. Some years I would cover them up and some years I would not. Once in a while, when I did not cover them, they would kill back. When I covered them up I had immense crops. Never raised any but the Doolittle.

Mr. Lyons. I had an extraordinary crop by covering up. The Gregg raspberry is splendid if you cover it up, but if not it is not good.

Mr. Chandler, recommending high lands for raspberries. The higher the better. I should prefer a north slope.

Mr. Pearce. There is another question I would like to hear discussed, and that is what protection we can give raspberries. Is there any protection we can give for covering to assist them in ripening?

Mr. Gray. If land is in good shape for raspberries, it should stand for four seasons, and then the plantation should be changed. If the land is good for anything, you can have four good crops, and then it is time to change about and make a new plantation. They don't do as well after four seasons as before.

A member said he had raised berries in the same place for ten years, and they were as good as ever.

Mr. Pearce. I think it best to mulch only with the leaves that drop from the bushes. That is enough. It will get richer. In regard to beds running out in three years, I know of two that have been planted fourteen years, and last year was produced the heaviest crop ever raised. The secret of the whole thing was in trimming, plowing, cutting out the sprouts, and not getting the stalks too thick.

Mr. Dean. What is the cause of winter-killing? I have an idea that where water will lie they will winter-kill. It is different where they remain dry in the spring.

Mr. Pearce. Low, frosty ground should be avoided. By all means select the highest ground.

Mr. Dean. Don't you think they will winter-kill some other way than from frost?

Mr. Pearce. As a general rule I do not think surface water will hurt plants. Wet land will kill plants. I think there is more injury done to raspberries in the spring than at any other time, that is if they winter well.

The question was asked, how should raspberry bushes be treated when they are through bearing?

Mr. Gilpatrick. I take out all bearing stock just as soon as it is done bearing. I find that taking the old wood out hardens them up for winter. They get hardy and ready for winter. When the bushes get high enough I clip them off and bury the tops when winter comes. I had considerable trouble with raspberry bushes before I commenced to bury them.

Mr. Pearce. I had a little experience with the Turner. I neglected them one year and got them too thick. The new shoots got ahead of the fruit. I went to work and cut them down be-

low the fruit, and every last one of them died. There should no cutting, you should pinch them back.

Mr. Gilpatrick had received information from an Eastern grower, who is one of the most successful growers in the country, that he sets the plants seven feet between the rows and five feet between the hills. The first year he lets them run to twenty inches and the next to thirty inches. He only leaves one bearing plant in each hill.

VARIETIES RECOMMENDED.

The question of the best red varieties for cultivation was then discussed. Mr. Chandler favored the Turner. Mr. Gilpatrick said the Turner was his choice every time. Mr. Lyons said there was nothing better.

It was moved that the Turner be recommended for early cultivation, and the motion was adopted.

Mr. Busse recommended the Philadelphia for second best for early cultivation. The recommendation was adopted.

Mr. Chandler recommended the Cuthbert for trial.

For the best black varieties Mr. Roberts recommended the Doolittle for early cultivation.

Mr. Gilpatrick recommended the Gregg for general cultivation, but it must be covered up in the fall.

The question of the different fruit boxes was then discussed very freely, but no conclusion was reached.

CURRANTS AND GOOSEBERRIES.

The question to be discussed at the next meeting was agreed to be "Currants and Gooseberries." Mr. Gray was requested to prepare a paper on the subject. The meeting then adjourned to Saturday, March 7th, at 2 o'clock P. M.

MEETING OF MARCH 7, 1885.

Minneapolis Tribune, March 12th.

CURRANTS AND GOOSEBERRIES.

Paper by J. S. Gray—The Best Varieties—The Subject Thoroughly Discussed by the Members.

The regular weekly meeting of the Hennepin County Horticultural Society was held on Saturday afternoon, March 7th. The minutes of the previous meeting were read and, after some slight correction, were approved. Mr. Pearce desired to make a correction in his statement concerning the treatment he intended giving his raspberries. He said he intended to cultivate them two or three times in the spring, and afterward mulch them. The president then announced the subject for discussion to be "Currants and Gooseberries."

Mr. J. S. Gray read an able and exhaustive paper on the cultivation of the currant, which is herewith reproduced in full:

MR. GRAY'S ESSAY.

We believe that the currants which we cultivate are from that stock which are natives of Northern Europe, the red and white kinds which were known three hundred years ago as smooth-stemmed gooseberries, the black ones being called squirrancy berries. Fuller says that the name currants, or corrans, was given them because of their resemblance to the Zante grapes, which are called corinths in the English market, as it was formerly almost entirely imported from that market. And while three hundred years ago the scattered inhabitants of Northern Europe must needs take to the woods and pick the wild, smooth-stemmed gooseberry, or go without, we of to-day find it difficult, with our fruit gardens, and all the helps of scientific agriculture, to produce enough of this fruit to meet the ever-increasing demand.

There are many different methods of propagation, namely, from seeds, green cuttings, ripe wood cuttings, layers, branches split from the main stem and dividing. Not wishing to discourage any new beginner by making a simple business process too formidable, I will describe only the usual and most successful

method of propagation, which is by ripe wood cutting. In the fall, after the bushes have shed their leaves, make your cuttings from the new wood; cut the pieces to six or eight inches long, square on the butts, slant on the top; tie in bunches and plant as soon as the ground can be got ready. It must not be understood as being absolutely necessary to plant cuttings in the fall, but we find that the most desirable results are attained by this plan. If the planting is to be delayed till spring the cuttings must be made in the fall and buried until ground can be worked in spring and planting done as early as possible.

If a large lot is to be planted, ground should be well plowed and harrowed, and straight furrows drawn three feet apart. The cuttings are then placed on the land side of the furrow, the soil well packed down around the butts of the cuttings, and the rest may be loosely worked in, remembering to so place the cuttings that two eyes, or buds, are left above ground; now a covering of straw or coarse manure, and the job is done till spring. By this system of fall planting the cuttings will all be callous and some make roots before winter, and when spring comes they are in the best possible condition to make good roots, which they will commence to do as soon as the ground thaws out. I will here say that in preparing the cuttings the buds are all left on, as it is more generally conceded that it is best to grow the currant in the stool form, and the buds being all left on will produce in after years a good supply of suckers to take the place of the old wood and those stems destroyed by borers.

If anyone wishes to grow the currant in tree form, in preparing the cuttings cut off all the buds except the two uppermost, and allow only one of these to grow, and then cut and shape the bush to your own liking. Fine, large fruit can be grown by this system, but if the borer gets into your one-stem bush that whole bush is doomed, and an ugly gap made in the row. Returning to our bed of straw-covered plants. When spring has advanced three or four weeks, we rake the straw from each alternate row, and run through with cultivator, rake the straw from the other rows, and cultivate the whole patch, leaving the straw on the ground all summer. The cultivating may be repeated whenever necessary. By this process of propagation fine plants are grown, with a loss of perhaps five per cent.

We should have for the main bed a good loam soil, rich, deeply plowed, and well harrowed. If the land is so full of manure that a furrow cannot be plowed, then mark with a six-foot marker.

Now walk from one end of the row to the other, stepping three feet, and plant with a spade at each footmark. If the land is not manured broadcast, then plow out the furrows deep, and manure in furrow before planting. At this distance 2,400 plants will be required for an acre.

For the first year a row of cabbage, dwarf peas, or beans may be grown between the rows. The after culture will be the supplying of large quantities of manure, mulching around the bushes, cutting out wood that is too old, and that destroyed by borers, but always keeping four or five stems to each plant, keeping the ground mellow by horse work, and such weeds and grass that spring up close to the bushes pulled by hand.

The varieties which have given the best general satisfaction are the Red Dutch, White Grape and Black Naples. Probably one or two other varieties of English origin, and also one or two of the seedlings of our local growers, may be better than those above named, but they should have a more extended trial before being recommended for general cultivation.

The currant worm is the larva of a yellow, partly brown-winged moth, which lays its eggs on the leaves of the currant. These worms are very destructive to the foliage of the bushes, and will in a few days, if not attended to, rob them of their entire foliage. The remedy is powdered white hellebore dusted on. A weak solution of Paris green will kill them very quickly, but it is too dangerous to use on fruiting bushes.

The borer is a common enemy to all plantations of currants. The stems containing a borer can generally be told by being of a darker color and having a withered look. The remedy is to cut out all such wood and burn it.

Assuming an average crop of fruit to be two pounds to the bush, with 2,400 bushes to the acre, we have:

Value of 4,800 pounds, at 7½ cents.....	\$360
Cost of picking, at 2 cents per pound.....	\$96
Baskets, twenty dozen, at \$1.....	20—\$116
	\$244

Leaving us \$244 per acre for cost of plants, manure, culture, mulching, pruning, and marketing. Not having the necessary data at hand for making a reliable statement as to the cost of the above items, I will leave it open.

In closing, I wish to call your attention to the fact that although

the mode of propagating by cuttings, as described in this paper, cannot be excelled for producing good, strong, well-rooted plants, still we cannot expect to make any advance in size of fruit, quality, size of bunches, hardiness of wood, or any constitutional change whatever. In fact we are at the end of our string, and must needs resort for advancement to the proceeds of growing seedlings from our best varieties. And I am of the opinion that we should call on the agricultural department of our State University to undertake this work, as the raising of seedlings requires a care and attention which few gardeners feel inclined to give, when it is remembered that long years of work and waiting must elapse before a test can be had of the value of the plant, with, perhaps, after all, nothing obtained of a money value, but simply a start in the right direction.

The thanks of the association were voted to Mr. Gray for his very clear, interesting and instructive essay.

DISCUSSION OF THE CURRANT.

The president then announced that the subject was open for discussion. He said that Mr. Chase had raised a great many currants, and asked him to give an estimate on what he considered a good crop.

Mr. Chase said that Mr. Gray's estimate was not far out of the way, but his opinion was that it was a pretty good crop.

Mr. Busse said he had raised more than that on three-year-old bushes.

Mr. Gilpatrick said his experience had been about the same as Mr. Gray's. He had had better crops than that, but that was about a fair average. The borers and blight on leaves set them back.

Mr. Pearce wanted more light on the questions of location and the preparation of the soil.

It was suggested that the richer the soil was the better it was.

Mr. Gilpatrick said his land was sandy loam, and he cultivated every two weeks.

Mr. Pearce said that on heavy land he would only cultivate in the spring.

Mr. Gilpatrick. It seems to be the opinion of four or five of my neighbors that that is the right plan. Those who have sandy land cultivate a good deal, and those that have clay loam cultivate less. I mulch with straw manure.

The subject of mildew being introduced, one member said he never remembered having mildew on his currants. Another member said his mildewed very badly last year.

Mr. Gilpatrick spoke of a case where whale oil soap had been used very successfully on mildewed bushes.

MULCHING AND CULTIVATION.

Mr. Pearce asked whether or not it was not best to mulch currants before cultivating in the spring. Mr. Gilpatrick said that whenever he had tried mulching the currants had done well. It was asked if corn fodder was not good for mulching after cultivating, in place of straw and manure. Mr. Hooper said his experience with corn was very discouraging. Mr. Chalmers said he was going to mulch his about a foot deep, after he had cultivated them once or twice, with straw and marsh hay.

Mr. Busse said that on clay subsoil he had found that the best thing to do was to thoroughly cultivate in the spring, taking a spade and digging around the bushes, and then to take rubbish or manure and mulch. After the fruit is picked give another cultivation. If there are any weeds pull them up. A spade is a good thing to use in cultivating around bushes.

Mr. Dean said there were two objections to mulching. One was that the roots grew too near the top of the ground and dried out in the hot weather. Another is that insects are more liable to breed in the straw than they would be if the land was thoroughly cultivated. He didn't think that land could be made too rich for currants.

Mr. Pearce. I think that it is the nature of plants to feed from the surface. I know of no plant that draws its nourishment from the surface so much as the currant. I took a patch once and covered it thick with straw, and the bushes grew more rapidly; the currants were larger than where cultivated. I examined the roots under the straw, and found that there were thousands and thousands of little roots there that came right up to feed. The currant is a surface feeder; and nearly all trees are more or less that way.

WORMS AND BORERS.

Mr. Pearce said the leaves indicated when borers were present. The wood turns black. He had cut hundreds of little

branches off, and found that the pith was entirely eaten out, and the worm was still alive.

Mr. Gray. I asked one of my boys what was the difference between the American borer and the European borer. He said that one was the son of a moth, and the other was the son of a beetle. One of them has feet, and the other has no feet. The beetle and the moth go out in the spring and lay their eggs. The eggs hatch out, and the worm eats the pith out of the stem, and the plant is destroyed. It remains, then, in the pupa state until spring, when it passes out.

Mr. Gilpatrick had raised currants for twenty-four years and lost but three crops. He cut the little bushes close to the ground every spring, and put on wood ashes, and has had no trouble since. He thinks the lye from the ashes kills the worms. He told a neighbor, who tried the same thing, and the effect was the same.

Mr. Busse. Take a handful of salt to each bush, and you will be sure not to have any borers near.

Mr. Roberts. Two years ago I put on a lot of coal ashes, and think I had the biggest crop I ever had before. I took the ashes from the stove in the winter, and threw them around the bushes. In the spring I took my hoe and worked them into the ground.

Mr. Pearce said that the borer was the greatest thing we had to contend with. More currant bushes had been destroyed by them than in any other manner, and if salt would kill them it was important that it should be known.

Mr. Gray thought the salt should be applied about the first of June.

VARIETIES RECOMMENDED.

On motion of Mr. Roberts the Red Dutch was recommended for general cultivation.

On motion of Mr. Gilpatrick the Stewart seedling was recommended for trial.

Mr. Gray recommended the White Grape for general cultivation, and it was agreed to.

No conclusion was reached in regard to black currants. Mr. Pearce said that it was a mistake that more of them were not raised. They are recommended by physicians, and will sell readily.

GOOSEBERRIES.

Mr. Gray said the only hope for us was in seedlings. The English gooseberry will mildew.

Mr. Gilpatrick had made a good many experiments with English berries, but had had no success.

Mr. Gray believed there was no use bothering with plants that are not adapted to this climate.

Mr. Pearce thought that the Downing was the most profitable berry.

Mr. Gilpatrick would not advise anyone to set out anything but seedlings.

Mr. Hodsdon, twenty-five years ago, planted wild gooseberries in his garden, and they improved in color and size, and grew more abundantly.

Mr. Pearce said that Mr. Sias, of Rochester, has been experimenting a good deal with gooseberries, and had become quite interested in it. He had grown a great many seedlings, and thought he had some profitable ones now. Mr. Pearce was of the opinion that the gooseberry could be improved just as much as any fruit that grows. He thought it would be advisable to plant the seed of the gooseberry and raise them every year. A variety that beats the Carson seedling will soon be here. It was highly recommended.

Mr. Burrell said that it had been said that mildew was caused by bacteria, and that the application of carbolic acid would remedy it.

Mr. Gray. We have got to keep on raising seedlings until we get a smooth surface variety. We must work for it till we get it. We will get it if we stick to it year after year. There are thousands of varieties in England. We must have something adapted to our climate, but we cannot except by cultivating seedlings.

VARIETIES RECOMMENDED.

On recommendation of Mr. Busse, the American seedling was placed at the head of the list for general cultivation.

A resolution was adopted to furnish a list of the officers of the society to the American Horticultural Society, for publication in their forthcoming report.

The subject for discussion at the next meeting will be "Apples."

MEETING OF MARCH 14, 1885.

Minneapolis Tribune, March 19th.

"THE APPLE" THE SUBJECT OF DISCUSSION.

*Paper by Mr. Pearce—The Varieties Best Adapted to this Climate—
The Society to be Incorporated.*

The twelfth weekly meeting of the Hennepin County Horticultural Society was held at the seed store of Northrup, Braslan & Co., Saturday afternoon, March 14th. The meeting was called to order by the president, and the minutes of the previous meeting read and approved.

President Pearce said that if people generally better understood the practicability of apple growing in Minnesota we would have an abundance of apple trees in the State. Good judgment should be used in the selection of the proper varieties for cultivation. What is wanted is a tree that is hardy and long lived. Mr. Pearce said he believed that such a tree was in existence, but it was not yet in the market. It was being experimented with by a nurseryman whom he would not name, and he believed the problem of producing an apple tree peculiarly adapted to Minnesota had been solved. But we now have a few trees that are particularly adapted to our climate. This winter has been one of the hardest winters for fruit trees we have had for many years. It has not been confined to Minnesota alone, but has extended to all parts of the country. The cold has been steady without intermission, and has tried our fruit trees as hard as they ever have been tried. We have fruit in Minnesota as perfect as perfect can be. The Wealthy is our favorite apple, not only in Minnesota, but all over the United States. The Whitney No. 20 ranks with any other tree in the country. It is a perfect grower, and Prof. Porter says it is the best tree he has ever seen. We can tie to that as an ironclad. Mr. Pearce then read the following paper:

MR. PEARCE'S PAPER.

If the thousands of farmers and others that have set out fruit trees from time to time, and as often lost them, had ceased doing

so for the time being and turned their attention to the investigation, in the light of reason and science, of the causes of the destruction of their trees, (and it is in the power of every intelligent horticulturist to do so,) and would give the subject a part of his time and attention and make himself familiar with the construction of a fruit tree, its variations and habits in different climates, its sap walls or storage cells, where it deposits its winter food, its air cells or stomata of the leaves and bark, how the food is taken up by the roots, assimilated in the leaves, and, by diffusion, sent to all parts of the tree, they would be in a condition to make apple growing a success in Minnesota. The fruit growers of Minnesota should years ago have made themselves familiar with these important subjects, which is just as essential to them as anatomy is to the physician. A physician's knowledge of the human system should be such as to enable him to assist Nature in keeping off disease, and when sickness occurs, to assist her in making a cure. The learned horticulturist occupies precisely the same position. He should know the soil and location on which the fruit tree will best flourish, what varieties to plant, how to prepare the soil, when and how to cultivate, what application to apply to keep the trees healthy and vigorous, and how to assist Nature to restore them to health, when diseased by neglect or accident. This knowledge is simple, pleasant, and easy to acquire.

You ask how this knowledge is to be acquired. Buy a few books on elementary chemistry and botany, and in your leisure hours study them, and when you understand their contents procure those that are higher. Organize yourselves into societies, hold monthly meetings, and oftener in the winter; have some one that is well acquainted with the subject that you are interested in read a paper or give a lecture, and then let discussion follow. Then put in practice what you learn. Send your sons to college and have them take an agricultural course. They want no Latin, Greek or Hebrew. The country to-day is burdened with lawyers, doctors and ministers who have taken classical courses, and are on the point of starvation.

I have aimed to point out some of the principal organs of a tree, and will now show, as far as I am able, what function each organ performs. Take a live fruit tree at the present time; its roots have been entirely inactive since the ground froze last fall. Since then there has been no circulation of the sap in the tree, and yet the tree, in one sense of the word, is active during each

season of the year. Starch is stored away for winter food in the bud and the millions of sap cells in the bark that are connected with the air cells, or stomata, of the outside bark. Through those air cells from the outside surface of the bark and buds the carbon in the air comes in contact with the sap cells containing starch, gradually changes it to gas, or vapor, and it passes off through the air cells of the bark during winter. This is what prevents a tree from dying, or drying up, during the winter. But in case the starch in the buds and sap cells of the bark becomes exhausted before vegetation starts in the spring, the tree, or the part or parts exhausted, dies. This is erroneously called sun scald, and usually occurs in March, or during a severe drought, when there is little or no moisture at the roots. When the frost is out of the ground in the spring, and the temperature gets up to sixty degrees or more, the starch remaining in the buds, sap cells, and other parts of the tree is, by the action of heat, carbon, and other elements, changed to sugar or sap, such as we find at the proper season of the year in the hard maple and other trees. In a few days after this chemical change takes place, if the weather continues warm, the buds begin to swell and little leaves appear. These receive carbon from the air, and the sap at once flows to the roots and excites them to action, and then the flow of food in solution from the roots ascends through the sap walls of the tree to the leaves. Here it is spread out through the leaves and assimilated, and becomes plant food, by diffusion to the growing parts of the tree, and new cell structures commence to form. This process of wood formation continues till the annual growth is complete, which is indicated by the forming of the terminal buds. Thousands of people here make a fatal mistake, who have the erroneous idea that when the terminal bud is formed the tree is ready to dig. Trees at this time contain but little else than gas and water in their cells, and if they are dug and exposed a few hours to the air will dry up. If a fruit tree is not checked by drought, low temperature, or unusually cloudy weather, its annual growth should be complete by the twenty-seventh of August. Then it commences to lay up its winter food by filling its cells and new wood with starch, and is assisted in the fall by cool evenings and nights, which harden and ripen the wood, and during the heat of the day all surplus moisture in a well-ripened tree tends to congeal and rupture the wood, or bark.

We have now followed the fruit tree through a year and noted

its various changes. Our failures in the past are the result of planting varieties not adapted to this climate. To make a success of the apple we must get our varieties from a climate similar to this in every respect. Our State society realized this important fact years ago, and have succeeded in procuring varieties that are reliable in this climate, and the fruit is both early and late and of good quality, and if properly handled, on the right kind of soil, they will always stand by you regardless of cold. I speak from knowledge, taking the past winter as a criterion. It will be two years before these varieties can be had in quantities. But you must beware of frauds, for many persons will be selling trees, representing them to be what they are not.

At the same time we must not forget our hardy varieties. Whitney No. 20 has done nobly. The Wealthy, the pride of Minnesota, and without a rival in any state for beauty and good quality, still retains its good standing at the head of the list. There is also Duchess, and when we get a few of our new iron-clad Russians trotted out there will be no excuse for not growing apples. The winter has been the hardest on fruit trees we have had for twelve years, and when the facts are known a sad lamentation will be heard in the West and Northwest, and other parts of the country.

GENERAL DISCUSSION.

Mr. Pearce further said that we have some Russian varieties that have been tested both for hardiness and quality of fruit. The fruit is adapted to the coldest climate of Minnesota. They are being cultivated and will probably be ready by another spring. He had examined some of the trees and found them perfect. There are some varieties that seemed to be perfectly adapted to this climate.

Mr. Gilpatrick. What trees shall we set out this year, and how shall we set them and cultivate them?

Mr. Pearce. I can put both hands up and say the Whitney No. 20.

Mr. Gilpatrick. How about the Wealthy?

Mr. Pearce. If you have got the soil they will grow right along. It will be found that our Wealthy apple has stood as well here as in any other state of the Union, and we should not discard it. Anyone that has high clay knolls need not hesitate about the Wealthy. We also have a crab that is very valuable,

the large Yellow Siberian crab. It is as large as the Transcendent, and will keep right along, and for sauce is better than the Transcendent. He did not think it possible for the cold of Minnesota to injure a fruit tree that is in perfect condition. But they may be injured by very cold weather coming on before the moisture had passed out and the wood was perfectly ripe.

Mr. Gilpatrick. Could not this ripening be helped by keeping the ground well cultivated? If the ground is plowed deep around the trees would not they get the benefit they ought to receive? The important thing is to keep the roots so low that they will not mind the heat, and if the ground is well plowed the tree will keep growing steadily. Deep cultivation will keep a tree growing, and it will mature at the right time.

Mr. Pearce. We have a climate here that is worthy the attention and study of every fruit grower and farmer. We mature corn here in ninety days that will take one hundred and fifty days a few hundred miles south of us. It is precisely the same with the fruit trees. The reason is that we have a wonderfully dry atmosphere. We have double the growth in the same length of time, and before we are aware of it the roots of our trees are suffering for a supply of moisture. I have no doubt but that nine-tenths of all the fruit trees in Minnesota have been killed by drought. We have got a dry atmosphere and that is the salvation of our agricultural pursuits.

Mr. Smith. The great cause of the failure of the importations from Russia is that instead of coming from the dry portions of the country they come from the Gulf of Riga. Trees gradually adapt themselves to that particular climate in which they are grown. The man who had an orchard last year and wished to carry his trees through this year ought to have gone to work and started their growth as quickly as possible, and he should have done so in a manner which was easiest for him. But above all he should have kept them growing. A rule that is safe to follow to insure safety through the winter is to keep up the growth until the first of August. I believe that it takes thirty days from the formation of a bud before the conditions are perfect for a second growth. We can avoid the second growth by keeping the tree growing as near to the first of August as we can. If we do that the buds will be in a dormant condition, and by the tenth of September the conditions of temperature will have changed so that there will be a second growth. If we can keep up the continuous formation of wood in the tree until the

first week in August it will go into winter quarters in good condition. The effect of a good plowing lasts at least a week on a tree. I don't think that the extreme cold had anything to do with the injury of the trees. I think that all the trees that were injured were injured before the first of October.

Mr. Pearce. I am positive that if we can keep the trees from being checked by drought and keep them growing until about the first of August, they will commence the process of hardening and ripening the wood, and there is no possibility after that of a second growth. It is my opinion that the only reason of this bad effect on the trees is the early hard cold weather coming on while the moisture is in the trees and before they have been cured. This second growth is almost certain to be fatal to trees.

In planting fruit trees we have got to be governed by the soil. If it is a clay soil I would say about two inches deeper than they were in the nursery. If the soil is very light make it three. If you are setting a large tree the trouble will be that you cannot get it too deep; but if you have the roots sufficiently near to the surface of the ground, they will knit together and the wind can not weave the tree. If the roots are well established, I do not think deep planting should be recommended.

Mr. Smith had planted trees on black clay subsoil, just slightly rolling. He back-furrowed the land into lines twenty feet wide, then ran four furrows in the dead furrow, then three furrows in the dead furrows. Then the men went in with their shovels, and where each tree was to be set they threw the dirt from the middle until they filled it pretty nearly level with the raised ground. Then we set the trees so that when the ground was level the crown of the tree where it was grafted was below the ground. Then we cross-furrowed, and afterward continued to throw the dirt towards the tree until the black loam was at least three feet deep. In building a road there eight years afterward it was necessary to move some of the trees, and there was found to be an abundance of good roots at the bottom, three feet below the surface.

Mr. Smith said that the exposure best adapted to fruit growing in Minnesota is a slightly sloping northeastern exposure, with a gravelly clay soil. The nearer we can get to that the better.

Mr. Busse. Trees from two to four years old are the best to set out, but three years are the best. As for distance I should set them fourteen or sixteen feet each way. I would set Tran-

scendents sixteen feet apart, but the Wealthy, Duchess and Whitney No. 20 I would not set more than twelve feet apart. When the trees are too far apart they don't protect themselves.

Mr. Pearce. In regard to mulching, I don't think fruit trees should be mulched right up to the tree. A space should be left around the tree for eight or ten inches. As for blight in Transcendent trees I think that it can be entirely stopped by simply putting straw under the trees over the roots, in the fall or early in the spring, letting it lie the whole summer. The only trouble with the Transcendent is the blight.

As regards trimming Mr. Smith said that it should be used as medicine for a sick man. If there is a necessity for trimming, then trim. But if a man is going to raise an orchard he should do it without trimming. Take the sprouts off when they are little. Never use a knife when you can possibly avoid it. When a limb is in condition to make it necessary to cut it away, the best time to do it is during the season of rapid growth. If you are going to trim because of ill shape, the best time is about the first of June. But above all, take the trouble to wax that cut over smoothly just as soon as you have done it. Everybody who can afford to have an orchard can afford a few pounds of grafting wax. To make it, take a quarter of a pound of tallow and one pound of resin. If you want it nicer you can put in some beeswax.

VARIETIES RECOMMENDED.

The Duchess and Wealthy were recommended for universal planting, and the Tetofsky in limited quantities.

For hybrids the Whitney No. 20, Beach's Sweet, the Orange, and Quaker Beauty were recommended.

For crabs, the Transcendent, Hyslop and Virginia were recommended. For the extreme north, the large Yellow Siberian, which grows where others fail.

It was decided that the meetings should continue for two weeks longer, and that at the next meeting the subject of "Grapes" should be discussed.

CHANGE OF NAME.

It was decided to change the name of the society to the Hennepin County Agricultural and Horticultural Society, and the

officers were instructed to take the necessary steps to have it legally incorporated.

Professor L. Asire offered the society the use of his new Northwestern College of Commerce rooms free of charge. The rooms will be ready for occupancy about the first of September. The professor's offer was accepted with thanks.

It was voted to return the thanks of the society to Northrup, Braslan & Co. for the use of their store for a place of meeting heretofore. The society then adjourned for one week.

MEETING OF MARCH 21, 1885.

Minneapolis Tribune, March 26th.

THE GRAPE AND ITS CULTIVATION.

The Best Varieties and How to Cultivate Them—The Name of the Society Changed, and Articles of Incorporation Filed.

The thirteenth weekly meeting of the Hennepin County Horticultural Society was held at the seed store of Northrup, Braslan & Co., on Saturday afternoon, March 21st. The minutes of the previous meeting were read and approved, after adding the Early Strawberry to the list of hybrid apples.

President Pearce said that the weekly meetings had been very satisfactory, and productive of much good, and that if the society was as prosperous in the future as it had been in the past, its influence would soon begin to be felt abroad as well as at home. He then announced the subject to be considered was grapes, and asked Mr. C. L. Smith to give the results of his experience in grape growing.

REMARKS OF C. L. SMITH.

Mr. Smith. I think we have made somewhat of a mistake frequently, in planting grapes in this State, by following too much the ideas formed in other localities. I have become satisfied from observation that the lighter sandy soils of Minnesota are better adapted to successful grape growing than the heavy

soils, while a hillside and southern exposure is preferable. I think that I would take level land in preference to a clay hillside. My idea used to be that a clay hillside underlaid with limestone was the best possible exposure for grapes. That is true in the East, but in Minnesota I think the sandy land is preferable. I believe that if it is worth while to plant grape vines at all it is worth while to go to considerable expense to prepare the ground. I would trench the ground in rows running north and south, eight feet apart and at least three feet deep. The expense of properly preparing the ground is a very small item in comparison with the increased yield. If I were to plant on level sandy land, I think I should trench at least eight feet deep and three feet wide. I should fill the trench with stable manure, and at least ten loads to the acre of refuse from the butcher shops, and the last two feet with good soil mixed with sand. I would plant the vines over that trench, planting them about six feet apart. I would plant the Concord seven feet, the Delaware five feet, and the intermediate varieties about six feet; making the average about six feet. I think it is a mistake to go to the expense of poles and wires for at least eight years. I would keep the vines back and not allow them to fruit for the first three years. I would secure two-year-old vines grown from old layers. I consider them the best vines for planting. They certainly will come into bearing earlier, and are more sure to live than any other vines I have ever planted. I would cut away about half of the root and all of the top but two or three of the highest, and let those set up above the ground, being careful to firm it well in. There is no necessity of watering, simply pressing the ground well in. The first year I should pinch off but one bud. In the fall I would cut them back, the Delawares about a foot and the Concord about twice that. Cover them with earth, and over the earth a mulching of stable manure. Leave that on until the leaves begin to start in the spring. Then uncover the vines and let them lie on the ground for the first ten days or two weeks. Provide stakes three or four feet long and drive in and tie the vines up to them. I would let two new buds grow from as near the ground as possible, and let them run on the ground the first year. I would cut these back at least a foot, and if they were not very strong, about six inches. The next year I would have fruit from those new vines. I would encourage two new buds from as near the ground as possible each year. I would not practice what so many do, that is summer pruning.

All the summer pruning I did I would do about the first of June. I would pinch off all the surplus vines but one or two each year. I would not pinch the buds of the fruit laterals. It is sometimes practiced, but I think it is to the detriment of the vines to pinch after the third leaves. But I would not allow the wood vines to make more than two or three shoots each year, pruning in October and November and laying flat on the ground and covering with earth. Should cultivate with plow cultivator and hoe. About the first of June each year I should cover the ground at least three inches deep with horse manure. I can say that in seven years we never failed to ripen our Concord grapes before frost, when we had three or four inches of stable manure put on before June. If it is cold and rainy I would wait until the middle of June. Just as soon as the rains have gone and the ground begins to dry, cover it with three or four inches of stable manure, and that ends the cultivation for that year, and the vines go into winter quarters in good condition. The man who leaves a large quantity of wood on his vines don't want any grapes next year. If you want a successful vineyard don't let the vine fruit the first year, and then again don't let it fruit to death the third year. It is best to cut away not more than ten bunches the third year. I think that if the ground is prepared as I say and the vines cared for properly and then heavily manured with horse manure in June there will be no trouble in producing large, well-ripened Concord grapes in Minnesota. The Delaware will probably after four or five years produce more grapes than any other variety that has been tried, but I would not discard the Concord. Moore's Early, I believe, is the coming grape for this climate. But at present the vines are scarce, and we have hardly tested it sufficiently to say to everybody, "Plant it." On sandy land, using the horse manure and forcing them along, you can get ripe Concords the first year.

GENERAL DISCUSSION.

Mr. Foster said he would proceed just about the same as Mr. Smith.

Mr. Gilpatrick said he could not suggest anything different from Mr. Smith's plan.

Mr. Smith. When a man has not got anything else than clay land I would not tell him to raise grapes. But of both kinds of soil I would prefer sandy. With the experience that I have

had, I should expect better success on the sandy soil of South Minneapolis than on the banks of Minnetonka. Grapes can be produced well in almost every place they have been planted in the State.

Mr. Pearce. I don't think there is any trouble growing grapes on sand. I think they will mature earlier on sand than on clay. The soil around Minnetonka, as a general thing, is a clay soil. I have observed for years that grapes and apples have done better on that soil than they have on the sandy soil. The apples on that high clay soil are in good condition. South of the lake the soil is a deep red clay. I think a week or ten days can be gained on sandy soil. At the same time, if I was going to set out grapes, and had a clay hill sloping to the south, I would choose it in preference to other localities. Heat is what we are after. I have known grapes to stand still for weeks after they were almost ripe because there was not heat enough to ripen them. In regard to varieties, I have planted the Delaware and Concord universally. About one-quarter of the Concords have ripened, and the balance have been sour. I think we ought to look very carefully to the locality of the vineyard, and suit the varieties to the locality. Concord and Delaware grapes are grown because they are universally known. Some people will send for Concord grapes, no matter where it is. I believe that Moore's Early will ripen in this climate. It is not a heavy bearer, but it is a good one, and the fruit is fully as large as that of the Concord. The grape is sweet and will command twenty-five cents a pound. From the best information I can get the Early Victor, a large black, is highly recommended. There is no excuse for a man saying he has not got the proper soil for raising grapes. If he will post himself on the different varieties he can get grapes that are adapted to his soil and will ripen there.

Mr. Grimes. The ground on which my grapes grow is hardly suitable. Some years they grow well and others they do not. I have planted the Concord, the Delaware, and the Hartford Prolific. The Delaware is a very good grape, and has given me as much satisfaction as any I have grown, but the Concord has produced the most fruit. My soil is clay, and only moderately exposed to the sun. It is a heavy soil and not calculated to ripen fruit as well as some other localities. I tried a few of Roberts' hybrids, but they were not satisfactory. As a general thing I would say that the extra early varieties are not as good in quality as the later kinds.

Mr. Smith said that he considered that a green Concord was about as good as a ripe Janesville.

Mr. Gilpatrick. I have never failed in ripening Concord grapes in the twenty years I have grown them. I cultivate early and thoroughly, and never have lost a crop of Concord grapes. But when I do not cultivate for two weeks I find them behind. I have given my grapes a great deal of cultivation. My experience seems to have been different from anyone else.

Mr. Smith. We have only lost one year since I have been in the State, and that was last year.

Mr. Grimes. If I was going to start a vineyard I would put out half Concord, but I should have more faith in cultivation than most men. I know a man that raised grapes on ground that was eleven feet subsoil—bones, horse manure and everything else. The ground was worked eleven feet. No water was used. Cultivation was once in two weeks. That man put out a vineyard to have grapes to eat. When I was there a few years ago they were the best crop of grapes I ever saw. I have never lost a grape yet. I have been planting the Rogers grape ever since I have been here. In setting out grapevines I would have the ground worked three feet. Good cultivation will pay. In Massachusetts, where the land was cultivated two, three, or four feet, the crop paid just in proportion to the depth.

REMARKS OF JOHN S. HARRIS.

Mr. John S. Harris, of La Crescent, Minn., said: The best soil for grapes is what we call a sandy loam, that has a certain amount of clay in it. The next best is a clay loam. A man at La Crosse had a strip twelve feet wide, on the north side of his garden, dug out two feet deep, and put in fertilizers, and the grapes grew well, but you cannot succeed with very sandy land on a side hill. If grapes are put on a sandy hill they will fail. Where the soil is sandy it is absolutely necessary to put on bones, etc., occasionally, as a top dressing. There are a great many who may dig a hole just as small as they can work in, two or three feet deep in the hardpan, fill up with fertilizers, and then set out the vines. They will grow a year, or perhaps two, but after that they will grow less and less each year, and finally will stop growing entirely. In setting out vines do not dig the vines any deeper than the ground has been stirred, so that the roots will start right and get an easy living in clean cultivation. There is more

in that than some people think for. When the August and September weather comes on, the ground should be warm; if there is a great mulch of weeds, the sun will not touch it at all, and the grapes will be later. Doctors disagree in regard to pruning. Commence to pinch back when the vine gets out three or four inches. You take off scarcely anything, and so it gets no check. The seed will start again, and when it forms two leaves give it another little pinch. It is not the sun and yet it is the sun that ripens the grape. The sun shining upon a grape will never ripen it, but the action of the sun shining upon the leaves is what ripens the fruit. As far as I at present know, in a region where the Concord ripens, we will find at least half of that variety. I believe that the Worden is nearly as good as the Concord, and I think it is a little earlier, but I want a few years more experience before I tell everybody to plant that variety. The Worden is not as productive as the Concord. There is another variety that I have tested that matures early, about ten days earlier than the Concord. If I was where the Concord would not ripen, I would plant Moore's Early, and if I lived in a region where I could not raise those, I would raise grapes anyhow, and would plant out the Champion or the Janesville. We only recommend these for places where other varieties will not ripen. The Champion is a very poor grape. It is the poorest grape we have ever had put on us. It is a very vigorous grower and early, and if you can't get anything else you can grow them. In planting the Concord I would endeavor to put them on a side hill, the steeper the better, if it slopes to the south. I would work it up pretty deep, and if I had to have it on level ground I would put up a board fence. A farmer might raise a vine or two on the south side of his barn. I have no doubt but that some of the new varieties would be valuable to us, but I would not recommend a farmer to try any of them. I have not grown the Victor, but from reports I think it is a good grape. I think there are half a dozen different varieties earlier than the Concord. I think it would be advisable to try a vine of the Niagara, but would not advise anyone to try many of them. It comes to us so well recommended that I have a good deal of hopes for it. But it did not originate in Minnesota, and may not be adapted to our soil. There is one advantage in the Worden, and that is that it is ready to eat before the Concord is. The Delaware will keep longer than the Concord. One of the very best grapes for keeping is the Catawba. So is the Rogers No. 4, the Rogers No. 15, and the Salem. The Diana is a very uncertain grape to

grow, as they have a great many green ones in the bunches. The Concord will only keep about ten days after it is picked.

DISCUSSION CONTINUED.

Mr. Gilpatrick said the Rogers No. 4 must be well cultivated or it will not bear good.

Mr. Northrup inquired when the grapevine was in its maturity.

Mr. Harris said from six to twelve years.

Mr. Northrup asked what was the lifetime of a grapevine.

Mr. Harris. If renewed occasionally, perhaps one hundred years. We have none here as old as that, of course, but it is claimed that they will endure for a hundred years. But the best in the vineyard are the four-year-old ones.

Mr. Gilpatrick said he had vines that he set out twenty-two years ago, and they had borne every year. He trimmed them back a little every year.

Mr. Harris. I believe in dropping vines down on the ground and covering them enough to protect them in the winter. Dirt is good to cover them with, but cornstalks are the best thing that can be had. I never had vines injured by mice, but I keep two or three cats on the place, and frequently take an oyster can with one end cut off, and put meal with strychnine in it, and put them out in the field, and put a little brush over it, and the mice will feed on that, and they don't want anything else.

Mr. Pearce. It is almost the universal practice in this climate to bury grapevines in the winter with earth. I have tried blackberry bushes by putting them flat down with a weight, and they winter without any protection. I can take a rosebush and lay it flat on the ground, without cover, and winter it perfectly. It is better, I think, to throw a little earth on them.

VARIETIES RECOMMENDED.

The Concord was recommended for general cultivation with moist, warm soil and southern exposure, or in quick sandy loam.

For the same soil with high cultivation, the Delaware was recommended.

Moore's Early was recommended for planting on any good corn soil.

Rogers Nos. 4 and 15 were recommended in limited quantities with high cultivation.

For trial, the Early Victor, Brighton and Duchess were recommended.

A NEW NAME ADOPTED.

Mr. Grimes made a report of his investigation in the matter of the incorporation of the society. The articles of incorporation will be filed immediately.

The action of the association at the last meeting, changing the name, was reconsidered, and, after considerable debate, the name of Hennepin County Horticultural Society and Gardeners Association was determined upon.

MEETING OF MARCH 28, 1885.

Minneapolis Tribune, April 2d.

Commercial Fertilizers and their Advantages—Articles of Incorporation Signed—The Meetings Adjourned until June.

The fourteenth regular weekly meeting of the Hennepin County Horticultural Society and Gardeners Association was held at Market Hall on Saturday afternoon, March 28th.

President Pearce announced the subject for discussion to be "Fertilizers." He said: We have never given that attention to fertilizers that it is to our interest to give. There are many persons who do not understand the advantages of fertilizers, and the fact is that for a half or a quarter of the expense they are now put to they can raise double the amount they do. We want an expression from all on this subject. If anyone here has had any experience in this matter we want to know the result of that experience. If it is possible for only a half or a quarter of the expense to bring about the same results it is to our interest to know it and put it into practice.

Mr. Braslan. I agree perfectly with Mr. Pearce when he says the society should be free in its opinion. In this country, which is growing so rapidly, there is a subject which should interest every farmer, and that is the subject of fertilizers. In New England farming cannot be carried on successfully without the aid of fertilizers. There are farmers here who haul manure from great distances to fertilize their land. The expense of that fertilizer is greater than that of any brand of fertilizer manufac-

tured in this country — that is when taking into consideration the expense of hauling. The head of a certain fertilizer company, the largest in the world, is very desirous that their fertilizers should be used here, and will make special prices, so that we can have a chance to try its merits. I think every farmer here should be ready to express his views in the matter. I know pretty well the effects of the different kinds of fertilizers, but would like to hear from others who have had experience with them.

Mr. Northrup. It seems to me that the most inexperienced of us realize that we have got to have some kind of fertilizer, and such being the case we should consider the advantage of a commercial fertilizer over stable manure and its freedom from foul seed and other foreign substances. Everybody can appreciate the importance of this.

Mr. Braslan cited an instance where 2,558 pounds of potatoes had been raised from one pound of seed by the use of a commercial fertilizer.

• Mr. Gray said that he used stable manure because he could get it handy, more than anything else.

Mr. Northrup inquired of Mr. Gray what he considered the expense of properly manuring an acre of land for a general crop.

Mr. Gray. You cannot make a definite price, because sometimes you can get manure that is very close to the farm and sometimes you cannot. Last fall I paid a man a dollar a load for drawing. I never saw land too rich to take fifty tons to the acre; sometimes it is better to put on seventy-five. The idea that land never requires manure is all nonsense. Land may be very rich but I always claimed that it still required some kind of fertilizer. It is all wrong to think that land may be too rich. It may be richer in one place than it is in another and may require evening up. As to the cost of manure it is a question that cannot very well be answered.

Mr. Pearce. Do you get any foul seeds in the manure?

Mr. Gray. Oh, yes; lots of them.

Mr. Braslan. How long does it take freshly made manure to become incorporated with the land so that it will be valuable?

Mr. Gray. I don't think much good can be got out of it the first season.

Mr. Braslan. If you were raising onions would you think it would cost thirty dollars an acre for manure?

Mr. Gray. Yes; it would cost all of that.

Mr. Woolsey. What guarantee can we have that patent fertilizers are worth anything?

Mr. Braslan. You have the guarantee of a man that has had half a century's experience in the business. You have the guarantee from farmers in New York, Pennsylvania, Ohio, all over the South, and from New England, and that they could not run their farms without fertilizers, especially those farmers that have land that is worth from six hundred dollars to eight hundred dollars an acre. I know from experience in several cases where manure has been used on one piece of ground and a fertilizer has been used on another, and where the fertilizer has been used it has produced larger crops and potatoes that were free from scab, which is always present on potatoes that are raised on land where manure is used. It makes an improvement in the looks of vegetables, and gives earlier and more abundant crops.

Mr. Woolsey. We have nothing in our State to protect us from fraud, but in some of the Eastern states there are provisions made for analyzing these fertilizers to see if they are good. But it is sent here, and we have no assurance that it is not a humbug. If the manufacturers would guarantee that what they sell is worth the money they represent it to be, it might be of some use to try it. I have seen it used, and know that it is a good thing, but until we have some guarantee that these fertilizers are genuine we had better let them alone. There are tens of thousands of loads of manure going to waste.

Mr. Braslan. Makers of fertilizers will give a written guarantee that the goods are what they are represented to be.

Mr. Gray. Manure brought out of the city contains all kinds of rubbish and we have no use for that kind. If the people of this city took the same care of their manure that they do in some of the Eastern cities and in Europe it would be another thing. It will then not only be worth drawing but will be worth paying something for. As between the manure picked up in the alleys of Minneapolis and the commercial fertilizers I think the fertilizers are certainly to be preferred.

Mr. Pearce. When you take from the ground more than you put back you rob the soil. There are persons who make a life study of these ingredients of the soil which are necessary to plant life, and have produced fertilizers which embrace all the properties that are needed in the various vegetables. Instead of returning to the soil in wagon loads what is taken

from it, it is reduced down until a pound represents a wagon load. The soil then produces what it did when it was virgin soil. A man that produces, year after year, crop after crop, without fertilizing, is a robber. Fertilizers have become in many parts of the country an indispensable article. The South to-day would not be worth much if it were not for fertilizers. We are rapidly drifting to that point ourselves. It is our duty as an agricultural State to turn our attention to these fertilizers and make them a study.

Mr. Hodgson. It is true that we are in some respects robbers when we crop land year after year without putting something into it. After we have drawn all the deposits that nature placed there, we must then ourselves make deposits before the land will honor our drafts of wheat, corn and potatoes.

Mr. Smith. The most important point to be considered is that these fertilizers can be used at times when it is not practicable to use the coarse manures. It is safe to say that cow manure and horse manure will not show much effect before the first of July. They do not get into a condition when they will be of any benefit before the hot weather. The fertilizers act immediately. It is a question of very great importance to us and to the whole State, and members of our society should, during the coming year, make some careful experiments, manuring with stable manure such as is ordinarily obtained, taking account of the amount used and the cost, and then on an equal amount of ground use some of the concentrated fertilizers and very carefully note the results. In this way, in another year we can determine the relative cost and advantages of the different kinds of fertilizers. I don't see how we can get anything definite in any other manner. The more concentrated the form of the fertilizer the greater the percentage of profit the farmer will derive from it. We ought to determine what particular kinds of fertilizers are best adapted to our soils and climate. I am satisfied from what experiments I have made that on wheat and corn in this State we can add a very large percentage to the profit of the crop by using some particular fertilizer adapted to that particular crop and the soil that it grows on. I have no doubt but that by the liberal use of fertilizing salt the wheat crop of Minnesota could be increased thirty per cent, and of that you gain at least twenty per cent profit. Wherever the salt has been used the result has always been beneficial, and yet I presume there is not one farmer in a hundred in this State that will use fertilizing salt this year,

although the expense is less than one dollar an acre, and the added profit, so far as has been reported, has never been less than five dollars. I am speaking of salt as a special fertilizer for wheat.

Mr. Pearce. Animal life is higher than plant life. Plants subsist entirely on elaborated food. The food is taken up in solution from the earth. When it passes into food, that is, when it becomes food for the growth of the plant, it changes. The fertilizers are prepared plant food. It is taken up by the plants without going through the process of preparing it. If you want very early vegetables, use the right kind of fertilizers.

Mr. N. G. Abbott. We have tried fertilizers, and have seen a very decided effect the first day after they were put on. When our plants are a little slow we get some plant food and put it on and they start up immediately.

There was considerable further discussion of the subject, but nothing more of importance was brought to light.

At the suggestion of Mr. Braslan, a motion was adopted requesting the Bradley Fertilizer Company, of Boston, to furnish to the members of the society samples of their goods for trial, with the understanding that they will make a fair report of the results obtained.

The articles of incorporation were read and adopted, after which they were signed by the officers and members of the society.

This will be the last meeting for the present, the next being on the first Saturday in June.

LETTER FROM PROF. J. L. BUDD.

AGRICULTURAL COLLEGE,

AMES, IOWA, May 13, 1885.

Mr. S. D. Hillman,

MY DEAR SIR: Many thanks for the advance sheets of your very valuable report.

Permit a word in regard to Mr. Tuttle's report on Russian apples. I am sorry he gave a verbal report, as such talks are rarely reported correctly. It was in consequence of a failure to report me correctly that gave rise to the impression on his part that on my return from Russia I had said Mr. Tuttle's varieties were either north German or Russian sorts grown near the Baltic.*

* See page 133.—SEC.

What I did say was that Dr. Regel, in 1869, was a much better botanist than pomologist. When he sent the great list of varieties to the Department of Agriculture at Washington he was experimenting with near two hundred varieties of the apple, from Dr. Lucas, of Reutlingen, and with about two hundred more from Lithuria, Dorpat, Vilna, and other points too near the water.

Yet this great collection forwarded by Dr. Regel contained a number of valuable sorts grown in Central Russia. These Mr. Tuttle has diligently been sorting out for the past fifteen years, and he has added to them by direct importation from Moscow. I knew all this before I went on an exploring trip to the great east plain, and regret deeply the impression of Mr. Tuttle that I do not unite with the whole North in thanking him for the importance of advance work he has been quietly carrying forward at Baraboo. In this great work of adapting fruits to the prairies of the immense Northwest we need united effort. Mr. Tuttle has aided our work by kindly forwarding cions of most of his varieties, and in turn we may be able to aid his work by the correction of nomenclature and in the way of finding out where this or that variety will succeed best.

Our inspection of Russian orchards in many provinces, and long talks with the best pomologists of the steppes of Europe, will aid materially in proper naming and distributing the many varieties of the families of Russian apples to which Mr. Tuttle refers. He is slightly mistaken in the belief that not much is yet to be done in the way of introducing best sorts. As an instance he speaks of Lord's apple. This is not the true Herren apple of Livonia, but is a member of the great family known as Arabka. Again he says he has all of the Anis family we name. Of the department list the only true Anis I have seen is No. 382, which Dr. Regel called Bufkaja Selonka, and this is not the fine red Anis of which we saw tens of thousands of bushels on the Volga. The Selonka of Central Russia is a yellowish green, winter apple, and a member of the great family known as Sklanka, all of which are winter sorts. Our collection contains very many varieties from the black soil sections of Central Russia, selected by such experts as Dr. Fischer, Dr. Tretjackoff, and Dr. Shrader. These will be the tests in the much needed correction of the Russian nomenclature. The report of Mr. Gibb, of Quebec, on this subject will give some idea of this great work.

I have started a large ledger in which is opened an account

with the varieties we send out, and the varieties received from all sources, of apples, cherries, pears and plums.

We need aid in this work, and hope that specimens of Russian fruits grown the coming season in Wisconsin, Minnesota and Iowa will be forwarded in proper season. Perhaps it may take ten years to complete the big ledger, but the ultimate publication of this record cannot fail to advance our horticultural interests.

Yours fraternally,

J. L. BUDD.

VINES FOR OUR HOMES.*

BY MRS. D. HUNTLEY, APPLETON.

The climbing vines are Nature's drapery, and with them she covers beauty and deformity alike with a mantle of loveliness. Nothing that art can produce can equal their elegant grace. "As the lilies surpass in beauty the robes of royalty, so these tender climbers surpass all the decorator's skill." Every tree and shrub of the forest takes on new beauty when entwined and caressed by the clinging tendrils of the Ivy or the Clematis, and the vine-clad trees and vine-covered doorway become a picture in the landscape which we never forget.

It is often said, "you cannot have something for nothing," but we come very near proving the saying false when we deal with Nature. If we plant the tiny seed, or set the roots of vines by window or doorway, by rustic arbor or trellis, and then do just what all have ever done who have accomplished anything good or beautiful, wait, wait and see what Nature will do for you; the vines will grow while you are waiting, and soon, without money and without price, your home—whether lofty or lowly—will be adorned with Nature's finest drapery, and neither rain nor sunshine will ever deface it.

The easiest way to secure vines for the home is to plant the hard-wooded, hardy climbers. They will live many years with little care, and become more beautiful with increasing age. The best of this class is the *Ampelopsis Quinquefolia*, now everywhere known as the American Ivy. It grows so easily and rapidly that there is danger that we shall fail to appreciate its

* From Wisconsin Horticultural Report, 1884.

worth. The late lamented Mr. Vick said: "This vine has done more to beautify rural villages than any fifty plants in existence." It is highly prized in Europe, where it is largely used in preference to English Ivy. The latter often becomes rusty and bare, while the American Ivy has immense foliage, and needs no special care, unless it should be necessary to cut back its rampant growth. We often see this beautiful vine adorning city homes, but many of the people of the country have not yet learned how attractive their dwellings could be made by the Ivy, which grows wild on their own farms.

The climbing Bitter Sweet, *Celastrus Scandens*, is a hardy vine, and in many places can be found in the forest, but it is not so often used for the porch and piazza as the Ivy. We know one city home where the Bitter Sweet was saved when the forest was cleared for the dwelling; it has become an immense vine, of great beauty. Its foliage is handsome, and its berries of scarlet and orange are very showy, and much prized for winter decoration.

Another hardy vine is the Moonseed, so called from its crescent-shaped seed. This, too, grows wild in many places in our State. It is a slow grower, but in time becomes large and handsome, and in autumn has clusters of purple berries.

The wild Clematis, which is very abundant in the woods, seems quite at home when transplanted to our gardens. It is not so hardy as either of the other vines mentioned, and will sometimes winter-kill nearly to the ground, but its growth is so rapid, it soon covers any support with foliage, and in summer is a mass of sweet, white flowers that are very lovely. There are many varieties of Clematis, both wild and cultivated, that are very desirable. That known as "Travelers Joy" we have had several years in the garden, and in the most exposed situations the roots survived our severest winters. No objection can be made to this vine on account of injury to buildings. If better known it would be greatly prized.

The Matrimony vine, with its willow-like streamers, is a pretty thing in appropriate places, and in some localities is very abundant. We have always admired it, at a distance, for it has persistently resisted all our efforts to make it grow in the garden.

All these can be easily obtained, are very ornamental, and best of all, when once planted, you will always have them. They can be trained upon the buildings, on a rustic arbor or cross in the dooryards, and, in any of these places, give pleasure when-

ever run. There are many other good climbers which are more rare, such as "Dutchman's Pipe," "Trumpet Creeper," "Climanthus," and many others which, if one has room and time for their culture, will be found very satisfactory.

Then there are a large number of herbaceous perennial climbers which die to the root in winter, and every spring come up again to gladden us with new beauty, and long before the end of summer give a wonderful growth of foliage and bloom. Of these the "Cinnamon vine," "Chrimyam," and "Madeira vine" are most common. The roots of the latter must be taken up before the ground freezes. Among this class of plants there is a vine with halberd-shaped leaves, and large, double, rose-colored flowers, which is sometimes called the "Rose Creeper;" it grows wild in many places, and is sometimes considered troublesome, but with good culture it can be kept from spreading, and when well trained it makes a pretty screen. Another wild vine with very similar foliage, has pure white flowers much like the Morning Glory. This was one of the vines that in our childhood we called the White Creeper. Then it was our admiration; we remember one eccentric old lady who trained it through her window and around her tall old-fashioned clock, but we had never seen it in the West, till one day last summer, when returning from the home of our worthy president we passed the "White Creeper" of childhood's memory in the woods near the Oneida settlement. With tenderest care we took it in our garden, but all our efforts to make it live were unavailing.

Besides the perennial vines we have a large number of annual climbers which all can have even in new or transient homes; wherever spring finds us, the little packet of seeds may be planted, and long before the summer is gone we have a profusion of flowering vines. First among them are the dear, old Morning Glories. There never was, nay, never will be, any vine lovelier than these glories of the morning. Then the Nasturtium with its golden and scarlet bloom, spicy stems, and curious seeds; and the canary vine, with its little bird-like flowers perched about among the pretty foliage; and the sweet peas, too, with their delightful fragrance. O, who could be content without these reminders of the old home gardens! Then we have the newer vines, some of them of surpassing loveliness, and they must have a place in the conservatory or veranda. Passion vines, *Cobia Scandens*, *Star Ipoima*, the delicate *Cypress vine* and the *Golden Thunbergia* are all easily grown, but for constant

growth and beauty there is nothing equal to the English Ivy and the wax vine, *Hoya Carnosa*. An old plant of the latter has been in bloom all winter, sometimes bearing thirty clusters of its waxy flowers at one time. Both these vines need much time to perfect their beauty, and when there is any danger of frost the quicker growing vines are much more satisfactory. Of this class the German ivies are best. It is said by some writers that these are not ivies, but they have so long borne the name we think them entitled to it by possession.

The variegated German Ivy, "*Senecio Scandens*," is much like the English Ivy in appearance, has thick, glossy leaves, and is a rapid grower. The common German Ivy is the best vine for the wall in partially shaded situations that we have ever seen. It will grow many yards in length and cover a large space in a few weeks. A pretty way to grow this ivy is to train it around an oval frame of wire or rattan of any size you wish, and, when well covered with foliage, take vase and frame to the parlor to decorate a picture.

For hanging baskets a well grown ivy is very handsome; so also is the *Maurandia*, and if the three colors, white, pink and purple are grown together the effect is very pleasing.

Another excellent vine for baskets and a comparatively new one is *Pilogyne Suavis*. This is a rapid grower. The leaves and tendrils resembling the grape; flowers are small and cream-colored. But of all the vines the *Smilax* is the daintiest thing for all decorating purposes. Its glossy leaves add grace to everything it touches.

The *Smilax* is prettiest grown in some ornamental pot or box that can be easily moved. Each vine should be trained on a separate string. When needed for decoration, part can be used without injuring the whole. When the vine is well grown take it to the parlor to adorn a picture, or place it at the window at the edge of a lace curtain, taking care not to keep it from the sunshine.

Another exquisite little vine is the climbing fern, *Lygodium Scandens*. This is not so common as the *Smilax*, but wherever grown it is thought to be fully its equal. Its foliage is airy and graceful, and when cut will remain fresh a long time. It is best grown in the manner described for *Smilax*.

Besides the climbers there are a large number of trailing vines which are indispensable for baskets or boxes, or in any place where a drapery of foliage is needed. Of all this useful class of

plants, if we could have but one, it should be the Kenilworth Ivy, which will grow anywhere, requires but little earth, and will cover brackets and baskets with a curtain of green. A tiny part of this pretty trailer upon a bracket is a fine ornament for any room.

The Tradiscantias, also, are among the best of trailing plants; they will grow beautifully where there is not a bit of sunshine. There are four varieties of this plant, often called the "Wandering Jew." The newest is the pink, white and green; this is a wonderfully attractive thing, and in a basket with the other varieties would be charming. Some of the Sedams are good for this purpose.

Then we have the garden Moneywort, which will grow yards in one summer, and the old ground ivy, which some think a pest, but we like it for its old time, suggestive name, "Up the Hill to Happiness," by which our grandmothers called it.

But time would fail to tell of all the lovely things which we find everywhere around us in boundless profusion. We pause in wonder when we contemplate the beauties of the floral world, and can only exclaim,

O! who that has an eye to see,
A heart to feel, a tongue to bless,
Can ever undelighted be,
With Nature's magic loveliness.

A QUARTER OF A CENTURY OF FAILURES IN FRUIT CULTURE.*

BY A. W. SIAS, ROCHESTER, MINN.

Some one has said of the poet Tennyson, that his "vanity, egotism and self-absorption are so great as to leave no room for manners." Now, while I do not covet such a reputation as this, I am at a loss to know how to relate all our failures without talking much about myself, and in that case, of course, I might be mistaken for an egotist; but as I have the enviable reputation of being a modest member of the Minnesota State Horticultural Society, I shall try hard to maintain this distinction, of which I am so justly proud, as this is a rare bird on our side of the river

* From Wisconsin Horticultural Report, 1884.

among "Tree Peddlers." This is the first opportunity I have had of meeting in connection with this society, although I have been slowly plodding along in this good work just across the "Father of Waters," for about twenty-five years, and after meeting in our own State such worthy members of your society as President Smith, Geo. Pepper, A. J. Phillips, E. Wilcox, J. C. Plumb, and others, it is not strange that I had looked forward to this meeting with high anticipations of pleasure and profit. To undertake to show up all the failures that we have met with from time to time during the past twenty-five years would require all the time usually devoted to one of your winter sessions.

The first cause of failure that came under my observation on my arrival in Minnesota was that of planting trees that originated in New England and the Middle States, none of which proved of sufficient hardiness to withstand our higher and dryer climate.

2. One great cause of failure was lack of care and cultivation, allowing the trees to dry up during seasons of drought. Have never yet seen an orchard in our State that was plowed and cultivated as much as it should have been. Every time you plow and drag an orchard you destroy millions of insect eggs, and at the same time kill myriads of insects that play such sad havoc on both tree and fruit. Thorough cultivation serves the double purpose of ridding the soil of injurious insect life, and bringing the trees safely through a season of protracted drought, which without such thorough cultivation sometimes causes the death of more trees than our most severe winters. There is no *substitute for moisture* in the orchard; it must be constantly kept up or your trees will surely perish. The more you cultivate, the better is the soil prepared to utilize the moisture from the atmosphere, and in no other way can you successfully combat the oft repeated objection that Minnesota is too high and dry for successful fruit culture.

3. Failures caused by locating orchards in low, frosty valleys, and in many cases too closely and heavily sheltered by tall forest trees, thus shutting out a free circulation of air, which is so essential in districts subject to blight. Have seen rows of *Duchess* blighted to the ground in such unfavorable situations, and have never known them to suffer the effects of blight in any other locations.

4. Another prolific cause of failure in Minnesota has recently been found to consist in planting too many Siberian crabs and

hybrids, so called, thus furnishing the best possible plants, as far as we know, for the successful propagation of the blight, and at the same time crowding the market with fruit, as a rule of inferior size and quality, that will seldom command over one-half the price of a good, standard apple. When Chas. Gibb, of Abbotsford, Province of Quebec, and Prof. Budd, of Iowa, shall have succeeded in bringing our long list of Russian fruits out of the mist and fog that surround them, and shall have boiled them down and *seasoned* them to our taste, *then* I predict we may safely substitute them for our Siberian crabs. Yes, and for the most of our so-called hybrids, too.

REPORT FROM WILLIAM SOMERVILLE.

Under date of May 17, 1885, Mr. Somerville, of Viola, Olmsted County, writes:

"With regard to the condition of fruit trees, would say that one can now determine with some degree of certainty as to the amount of injury sustained from the severity of the weather of the past winter. It was the most trying winter to trees in orchard ever experienced, with a single exception, during a residence here of twenty-five years. From recent examinations, find that my Russians, of which I have about fifty varieties, have withstood the test remarkably well, and most of them are comparatively uninjured, either in twig or bud. Duchess, with me, is all right, also most of the hybrid varieties; Haas virtually dead, although it has heretofore proved to be hardy in this locality. Elgin Beauty shows the least injury of any of the Minnesota seedlings; is less affected than Wealthy, which gives indications of more or less injury."

Mr. Somerville's orchard is situated on a gentle northern exposure; soil, rich clay loam, and is surrounded by evergreens, wind breaks and natural groves.

This closes the reports received on Fruit Prospects in Spring of 1885.

It should be stated that the article from Red River Valley (page 296), was written by Mr. R. M. Probstfield, of Moorhead.

STRAWBERRIES.*

[*From Farm and Garden.*]

The strawberry is more uniformly successful in all soils than any other fruit. It appears more at home, provided manure and moisture are present, than any plant we cultivate. The strawberry will do very well in wet land, if it is cultivated

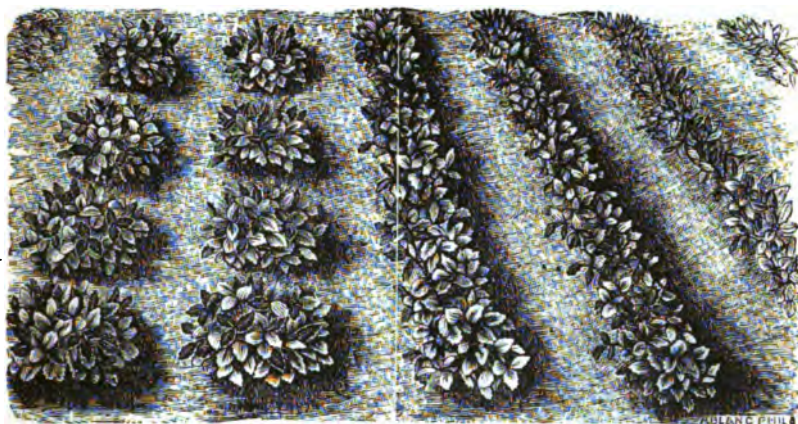


FIGURE 1.— MATTED ROW AND HILL SYSTEM.

in narrow beds with furrows deep enough to hold the standing water. The crowns of the plant must be kept above standing water, or the plant will drown out. With narrow bed culture, wet lands will produce fine berries. Even shifting sands will, with proper culture, yield rich returns of excellent fruit. The best soil is one moderately moist (not wet) and friable enough to allow the berries to root easily, for no plant loves a well cultivated and friable soil as much as the strawberry. A noted strawberry grower says a soil that will produce good timothy will produce good berries. So it undoubtedly will, and so will lands too light in character to grow timothy or other grasses.

PREPARATION OF SOIL.

Much labor may be saved in cultivation by selecting land that has been long in cultivation; land, where all seeds of red and

* Through the courtesy of Col. J. H. Stevens of *Farm, Stock and Home*, we are permitted to use the cuts for illustrations given. —SEC.

white clover, green and blue grass, and perennial grasses have been eradicated. These grasses we mention are very troublesome to destroy. They will take root after the tending of the berries is finished, grow a great height before the berries ripen, and will seriously injure the crop. They cannot be removed until after the picking, and then they have grown to such a height, and are matted so thoroughly, that their removal is very difficult. For this reason we mention the previous preparation of soil. The thorough eradication of these grasses is desirable. Care should also be used not to apply any manure or mulch that contains foul seeds of clover or grasses. Barn-yard manures should be composted with potash salts before using, which will, if properly applied, destroy all the seeds in the compost, and be useful as a fertilizer also.

BOTANY OF THE STRAWBERRY.

It may not be known to some of our readers that all plants are bisexual, except a few plants called Cryptogams. Most plants



FIGURE 2.

are perfect, or that is, plants that have both stamens and pistils perfect in all the flowers. The Wilson and Sharpless are of this class, and are hermaphrodite, or perfect-flowering, while in the Manchester, Crescent, and others, the stamens are abortive or wanting, and such berries are called pistillate berries. The pistils are the female parts of the flower; they spring from the seed the berry, one from each seed, are about a line in length, and are found in the centre of the flower. Figure 2 gives a flower where there are only pistils present. Figure 3 shows the same flower cut in sections. Such flowers as those of pistillate berries, like the Manchester, Crescent, and others, will not bear fruit unless a staminate plant, as the Wilson or Sharpless, is planted near to fertilize them. This is done by the stamens of the flowers which are shown in Figure 4, and in cross-section of Figure 5, where the stamens are seen in an outward circle around the pistils in the centre of the flower. These stamens produce a kind of yellow dust, called pollen, and when a bee, or other insect in search of honey, crawls over the flower, some of the pollen clings to the bee, and is lodged on the pistils of the flower. The flower is then per-



FIGURE 3.

fect. A portion of the pollen which still adheres to the bee, is carried to those plants which are deficient in stamens, and hence, also in pollen, when at once the same fertilization takes place as it did in the former case. The reader will see, were it not for the bee and the stamens of the perfect blossoms of the staminate berries, the pistillate berries would be barren, and would not produce under any circumstances. Such varieties often fail to produce fair berries for want



FIGURE 4.

of a sufficient number of perfect flowering varieties near them. When they are planted four to one, the fertilization will be complete, and an abundant crop of perfect berries will be produced. The question will be asked, "why plant pistillate kinds at all?" We answer, "many of the pistillate berries are the most productive and valuable varieties when properly fertilized, and are among the most profitable."

THE EFFECTS OF CROSS-FERTILIZATION.

The *Farm and Garden* was the first agricultural paper to give prominence to the important effects of cross-fertilization of strawberries. In January, 1884, our gifted contributor, Mr. J. T. Lovett, first brought the subject prominently to the notice of the horticultural public. The subject is now of much interest to all fruit growers. Mr. Fuller, some years ago, alluded to the fact that there was a variation of berries where there was a cross-fertilization, but it remained for Mr. Lovett to fully demonstrate the influence of varieties on each



FIGURE 5.

other when planted together, as he did fully, first in the *Farm and Garden* of last year. Many deny there is any influence at all exerted by pollenization, and it was a fertile subject of discussion at the recent meeting of the Mississippi Valley Horticultural Society at New Orleans. Wm. Parry, of Parry, N. J., claims he has observed the effects of cross-fertilization fully marked in pears, and many others claim the same of other fruits. There are also very many who deny any such effects, and attribute all the changes noticed to difference in cultivation. We find, by intercourse with many practical strawberry growers, and from reports of the various horticultural societies we re-

ceive, that the fact appears to be well established that changes do occur by cross-fertilization, that fully affect the size, flavor, and general character of the fruit. The reader will read elsewhere in this paper the difference in the sexual organs of the strawberry, and that while some are perfect flowering, like the Wilson, Hovey, and others, yet there is a large class which need, like the Crescent, Manchester, and many more, to be planted near the others, or they will fail to produce perfect berries, or entirely fail to produce at all. The Wilson will, as fertilizer, with pistillate varieties, make a firm berry and will carry well. Let the Sharpless be used, and a larger berry will be produced by the cross, but at the expense of the firmness. A well-known grower of strawberries showed us some rows of the Manchester, in which every fourth plant was a Sharpless, and informed us that the Manchester was so changed by the Sharpless in its size, shape, and color, that they were all picked and sold together for Sharpless, and were to all appearance Sharpless. He had all the bearing qualities of the Manchester combined with size, color, and shape of the Sharpless. Director Lazenby, of Ohio Experimental Station, in experiments with cross-fertilization, has found in every instance a marked resemblance in shape, size, color, and general appearance to the fruit of the male parent. So strongly was this marked that he states that the cross-bred berries bore no resemblance to the female parent. Crescents were fertilized with four different varieties—Cumberland, James Vick, Charles Downing, and Sharpless. Fertilized by the Cumberland, the berries were light in color and soft; with the Vick, small but firm; with the Downing, they were similar to the Downing, with the characteristic gloss of that berry; with the Sharpless, they were large, like the Sharpless, and irregular. He also experimented with the Manchester, with the same results as with the Crescent.

T. T. Lyon, of Van Buren, Michigan, in a letter to the *Rural New Yorker*, disclaims belief in any marked degree of effect in pollenization, and says that the Crescent remains, with him, the same soft, insipid berry, whether fertilized by the Wilson, Bidwell, Sharpless, or Miner, and says the same of other varieties he has tested in cross-fertilization. He claims soil and cultivation will account for the changes supposed to be produced by cross-fertilization. There is a possibility that Mr. Lyon may be misled, from the fact, as observed by Mr. J. B. Rogers, of Milburn, N. J., that some of the pistillate berries, in rich soils, be-

come fertile and self-fertilizing, and such may be the case with Mr. Lyon, and his berries may not be cross-bred at all. So far, it appears to us, the proof that cross-fertilization does affect strawberries, as asserted, seems to rest on a good foundation, and will be advisable for our readers to make a note of it.

FERTILIZERS.

The strawberry wants two things in abundance, *manure* and *water*. The ground cannot be made too rich and productive. Potash and phosphate, especially potash, are specific manures for strawberries. They never seem to know when they get enough of them. Barn-yard and stable manures contain them all, and can safely be used in any quantity. The more you use of them the more the profit; the last load in all cases paying better than the preceding one. Where there is a scarcity of stable and barn-yard manures, ashes and the various potash salts are next in value when applied with bone-dust. The high grade sulphate—eighty per cent—we like best, then the muriate, and the common form of kainit.

The proper time for application is, when used largely, before the plants are set. One ton per acre of potash salts and one of bone-dust will be found useful. The bone-dust can be sown broadcast, after setting the berries, but before is preferable. The use of potash fertilizers, after setting, must be in small quantities—say two or three hundred pounds per acre, and after each rain again applied. By this manner of applying the potash salts all danger of burning the plants by them will be avoided. Gypsum will make the berries of a lighter color, but will not affect the firmness. Where a rapid growth of the berry is desired, the application of two hundred pounds of nitrate of soda per acre, before a rain, a week or two previous to ripening, will greatly increase the size of the berries, but at the expense of firmness. Varieties that have large leaves, like the Sharpless and Kentucky, will be greatly increased in foliage and will ripen poorly, while those of moderate sized leaves, like the Wilson, will be benefited by it. The leaves will be so increased in size that the berries will be better shaded. The nitrate of soda also is valuable in dry weather. Plants fertilized with it will stand dry weather better. Use manure freely for great profits in berry culture.

IRRIGATION.

The question of irrigation is each year commanding more attention among practical strawberry growers. The great value of moisture to the crop, and the uncertainty of rains at the period of ripening, the most precarious period of successful berry culture, has led to an extended discussion upon the merits of irrigation as a means to supply moisture in field culture. As yet no

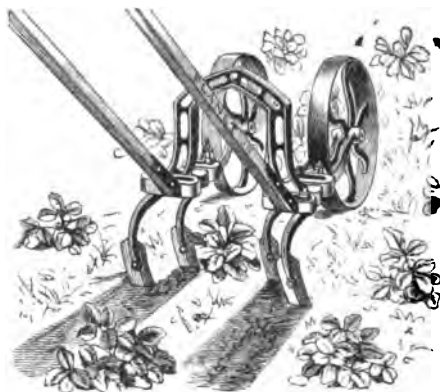


FIGURE 6.

experiments have taken place that will fully decide if irrigation pays, by an increased yield of the crop. No one doubts the value of irrigation, the cost is the only question to be decided. The most successful plan so far has been the laying of drain tiles a foot deep under the row before setting the plants, and when the irrigation is needed, filling the tiles with water and allowing the water to saturate the soil. This plan has been found to be the best of *all plans* so far tried. The water does not harden the soil as when applied by surface watering. We shall watch with interest trials that are made to test the water. A very successful plan of irrigation for garden culture is that of setting near the berry plants ordinary earthen flower pots, even with the soil, and on approach of dry weather filling them daily with water. Those who try it will be delighted with the largest and most delicious of berries.

.HILL CULTURE.

Hill culture would be more practiced in berry growing were it not for the trouble of keeping the runners from taking root,

thus making the matted row, and also the use of the hoe being more necessary. We give a cut of a very excellent plan of setting berries by the hill system, and an easy plan of cultivation, whereby the use of the hoe is almost entirely avoided. The plants are set in rows, eighteen inches between them, and the same distance apart in the rows. Then a space of three feet left for horse cultivation, and three rows of hills planted as before. These hills range crossways as well as in the row. The cultivation is easy. The three foot space is thoroughly pulverized by the horse cultivator and crossways by the use of the Planet, Jr., wheel hoe, the use of which is plainly shown in the cut. When hoed crossways, the cultivation is continued by going the other way and all the soil will be loosened, weeds and grass exterminated, and the labor of hill culture will be greatly reduced. The ground should be cultivated by the wheel hoe after each rain. The weeds and grass are more easily killed by frequently stirring the soil, than by destroying it after it has become well established. After the berries have fruited, the space between the hills is well culti-



FIGURE 7.

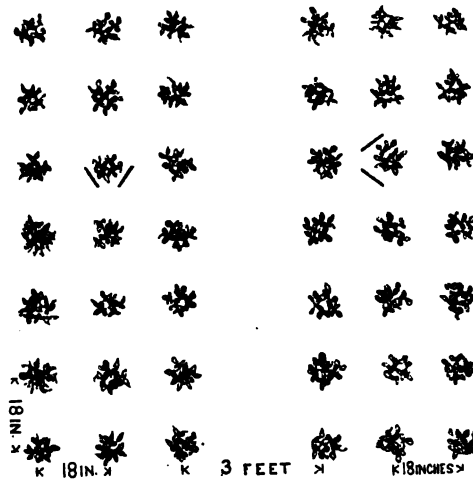


FIGURE 8.

vated and manured, and the runners may be allowed to grow. They will soon fill the space and make a matted row for the next season's crop. We prefer, however, annual renewal. The runners are easily reduced by the use of a circular cutter, an illus-

tration of which we give. The cutter is made of a cast steel ring, a foot or so in diameter and very sharp. A single thrust over the hill will cut off all runners in a rapid and successful manner. With the aid of the wheel hoe and runner cutter, the labor in hill culture is greatly reduced. We give in Figure 1 a good illustration of the berry in both hill and matted row systems of culture. It conveys clearly the two plans.

TRANSPLANTING.

Always secure young, vigorous plants of the varieties you wish, for transplanting. Old plants—those that have set fruit—are not good for this purpose. They may be recognized by the black roots that adhere to them, and if these are used, the old roots should be broken off, with the black stem to which they are attached.



FIGURE 9.

Young plants may be known by their fresh-looking appearance and the mass of long, white roots, free from black ones, and are the only ones fit for setting.

The dead leaves, if any, are also removed, and if the weather be dry, allow but a few of the green leaves to remain. The leaves will soon grow, while if many are left the plant may be exhausted of all its vitality and perish. The best season for planting in field culture is in May, or earlier, if weather permits, for the plants become then fully rooted for a large crop the coming year. In transplanting, spread the roots out even with the surface, as shown in figure 9, not too deep, as in figure 11, or too shallow, as in figure 12. The cuts are so well done, that the idea of setting is fully illustrated.



FIGURE 10.

MULCHING.

The great use of mulching berries is not only to keep the weeds from growing, but also to keep the ground from exposure to the hot sun and drying winds. The mulch, by its gradual decay, also furnishes manure for the soil. The mulching should not be

done before a hard freeze in the fall or early winter. Freezing will arrest the growth of the plants, and they can then be covered with the mulch without danger of smothering them, as a more early mulching might do.



FIGURE 11.

The best material for mulch is fine hay or fine-cut straw, and chaff that falls behind the machine in threshing. All that is required is fineness of the straw or hay. Long straw cannot be spread evenly, and it cannot be removed from the row in spring when the plants are starting into growth. The thickness of the mulch depends upon the material and the climate. When the mulch is fine and the winter mild, from four to six ordinary loads, per acre, are sufficient for a covering an inch or two thick. When the mulch is coarse and the winter severe, from four to five inches are used. In spring the mulch must be carefully removed from the crowns of the berry plant, or it will smother them. Mulching always pays well. It makes larger berries, keeps them free from sand and dirt, and by making them later in bloom, lessens the danger of injury by late frosts. Many Western growers, after the crop of berries is gathered, set fire to the mulch to kill the insects injurious to the fruit.

PICKING AND MARKETING.

Berries carry, keep fresh longer, and of course sell better, when a portion of the stem is left on when picked. This is done by pinching off the stem above the berry, with the thumb and finger nail, taking care not to bruise the fruit. Pulling or stripping the berries from the plants will lessen the market value and when very carelessly done, the berries are valueless for shipment. Berries carry better when picked in the cool of the morning, and allowed to stand open to the air in the shade. Picked in a hot sun, and at once put in a tight box, out of the wind and air, will cause speedy softening and decay. Always ship berries in a well ventilated car. Ventilation will always keep the fruit in good condition. It is needless to say, make your berries good for good prices. The crates for shipping should be as light and have as much spring as possible. The boxes must be packed closely in the crates to prevent shak-



FIGURE 12.

ing or moving. Berries well picked and well shipped, are half marketed. Never lose sight of the market for berries.

VARIETIES.

We will not take up the subject of varieties. Our country is so large, the climate so varied, the number of varieties so great, and the wants and tastes of people so different, that we could not recommend a list that would suit all who would grow berries. We are often amused to hear berry growers, who plant largely, in the same vicinity, differ widely as to the varieties that suit the neighborhood in which they are located. "When doctors differ, who shall decide?" All we can do is, from time to time, to figure and accurately describe all berries, as they appear to us. The selections must be to the taste and wants of the grower. The suitability of any berry can only be correctly found by trial on the grounds of the person who wishes to grow the best fruit. No theory will be of use. Practical experiments only will decide it to the satisfaction of the grower.

IN MEMORIAM.**HENRY CARROLL STEARNS.**

Henry Carroll Stearns, L. L. B., was born May 11, 1851, in Walpole, New Hampshire. Died Aug. 15, 1884, in Lakeland, Washington County, Minnesota.

The subject of this memoir was the only remaining child of Josiah W. and Abbie Martin Stearns, recently of Watseka, Illinois, but originally of Walpole, New Hampshire. The family name is old and honored in the town of Walpole, dating back in its ancestry to 1630, when Isaac Stearns landed at Boston as one of the passengers of the ship *Arabella*, from England.

Henry C., was a lawyer of much promise in the county of Iroquois, State of Illinois, where he practiced his profession for about six years previous to his coming to this State, being a graduate of the Union College of Law in Chicago, 1876, and admitted to the bar of the Supreme Court of Illinois, the same year. He established a practice in the city of Watseka, the county seat of Iroquois County, where he was highly esteemed by the bench and bar, and by the community generally, until the season of 1882, when his condition of failing health induced him to seek a climate with a dryer atmosphere and having a dryer soil. The State of Minnesota seemed to fill the requirements, and his purpose was to establish himself at Minneapolis; but being too ill to engage in business, he was induced to accompany his devoted parents to the bluffs near Lakeland, where it was hoped the healthful occupation of farming and gardening, under favorable circumstances, would soon result in the restoration of his health.

These hopes, however, proved delusive, as the flatteries of consumption usually do, and after a few months of heroic struggle with this old and most formidable foe, in which he exhibited the highest qualities of patience, fortitude and courage, his attenuated form and panting breath yielded to the inevitable, and the ambitious young lawyer, the affectionate son of doting parents, sleeps in death.

Mr. Stearns possessed, in an eminent degree, those admirable qualities and habits which give assurance of success in an honorable career. Numerous certificates from professional brethren and others with whom he was associated speak in generous and

confident terms of their high hopes and expectations concerning him.

Says his law partner: "I found him to be well acquainted with intricate legal questions, diligent and able. Possessing these essentials of success, he won, and deserved it too, a high rank and an enviable standing with the bench and bar of this district. His determination to leave us is a matter of much regret. As a public speaker, Mr. Stearns is logical and eloquent; as an associate, he is agreeable and courteous."

Weary and worn, go
Rest thee, Stranger, Brother,
Thou art bereft, it may be,
Of a few years of culture
And of fruitage here,
By the swiftness of slow disease;
But thy harvests of well doing
Whilst thou didst stay,
Nor kings, nor thieves can take away.

"When all the things thou calledst thine—
Goods, health, pleasures, honors fall,
Thou in thy virtues shalt survive them all."
And the others, too, shall yet be garnered there,
By One whose tender thought hath numbered every hair.

RICHARD PORTER.

Richard Porter was born at Vermilion, Ashland County, Ohio, June 16, 1825, and at the age of 21 took up his residence at Decatur, Indiana. Ten years later, and on the thirtieth day of May, 1856, he arrived at Rochester, Minnesota, making that city his home till the day of his death, which occurred Jan. 15, 1885, near Huron, D. T., where, together with his son, he was trying to perfect a title to a piece of government land.

The desire to perpetuate the memory of departed friends manifests itself in various ways. Perhaps the use of the marble slab is the most common; but a tree is a monument, and the most fitting one for our friend, who was always so *much* at home among trees, fruits, and flowers. "How living and lasting an epitaph is a grove of trees planted by some early pioneer." In 1884 Mr. Porter was vice-president of the Olmsted County Horticultural Society, and delegate from that to our State Horticultural Society, where he took an active part in everything per-

taining to the welfare of the society or for the promotion of the cause of horticulture in our State.

SKETCH OF HON. CHARLES DOWNING.

The following biographical sketch of the life of Hon. Charles Downing, by S. B. Parsons, is taken from the *Rural New Yorker* of Aug. 16, 1879. It shows in few words the high estimation placed upon his character at the time those lines were written.—SEC.

"Born in 1802, and, working with his father among trees and flowers until twenty years of age, he then succeeded him, and commenced that series of experiments with fruits which makes him now the most trustworthy pomologist of America. From 1836 to 1838 he was in partnership with his brother, who afterwards commenced his literary work, and filled the niche which was then open. A. J. Downing held a spirited and graphic pen, and his breezy articles, when editor of the *Horticulturist*, were the natural outgrowth of his taste and love for horticulture. In the preparation of his book of fruits, however, he was much indebted to his brother Charles, whose long experience gave him accurate knowledge, and who had fruited and compared many thousand varieties. After the death of A. J. Downing this book passed through several editions, each greatly enlarged by Chas. Downing, until the present edition is the best pomological book in the world, and made so mainly by the labors of the subject of this sketch. It was not until after 1840 that I knew either of them; and while admiring the striking qualities of his brother, I was always impressed with the quiet observation, the great accuracy, and the unobtrusive modesty of Charles Downing. He never sought appreciation, but always received it from those who truly knew him. While writing of his attention to fruits I should not forget his love for ornamental plants, and his knowledge of them. His old place was much changed in 1868 by the running of streets and the destruction of many of his trees. He still indulges his taste, however, and his memory does not fail him. Anyone desiring information on fruits can rely upon its correctness if received from Charles Downing. When thinking of the usefulness of such a life one cannot help wishing for the old days of Methuselah when man's life was not limited to four score years.

"In the career of the two brothers is a valuable lesson. One gave his life to save life; the other spent his years in labor for men. Sacrifice and labor are two pivots on which the moral world revolves. Happy is the man who has his share of each."

TREE CULTURE.*

BY DR. BENGGLY, OF LA CROSSE.

*Forests and Their Relation to Climate—Hydrography, Agriculture and Horticulture.**Mr. President, Ladies and Gentlemen:*

All of us are very well aware that the extensive territory of the United States of America is the most recently cultivated country. Only a few centuries ago the same was a wilderness in its entire circuit. In almost immeasurably extensive dimensions, more particularly in the hilly and mountainous regions, all the land was covered with luxuriant forests, whose origin, growth and temporary partial decline was left to nature and its unrestrained activity. Tranquil waters in the shape of large and small lakes, and flowing waters in the form of springs and large and small rivers, passed through the country from and in all directions. This mass of water and its flow was at that time nearly symmetrical. Expansive, treeless prairies made their appearance with surprising rapidity, similar to the small and large deserts of Africa, with this remarkable difference, however, that instead of being sandy, dry and bare of vegetation, they present, in combination with a soil enriched largely with humus, a growth of grass marvelously luxuriant, and a lower strata of soil abounding in water. This latter peculiarity caused the soil to become marshy to a more or less extent. These level prairies, existing in unbounded expansion, are chiefly located in the central regions of this vast territory; no hills, mountains or trees are visible, and furious hurricanes visiting these deserts periodically exercise their absolute authority; by reason of which state of things a prosperous growth of trees appears to be absolutely impossible. In those districts of the country which are covered with a more or less dense growth of timber and where an abundance of water exists, a damp and rugged climate prevails, the same as everywhere else on the surface of the earth. The climate of our country must have been, during the time of its wilderness, in a large measure a damp and inhospitable one. The country was nevertheless at that time abundantly provided with animals of different species. Multitudes of fish and ani-

* This article, procured from the author by Mr. J. S. Harris, to be read at the Annual Meeting, was not presented for lack of time.—SEC.

imals of other species were to be found in lakes and rivers, the forests and open prairies harbored countless numbers of game, and the shrubs and trees furnished a vast amount of nutritious fruit. Everything necessary for the sustenance of a frugal human being, in the form of food, clothing and habitation, was, in a strict sense of the word, at that time attainable with comparatively little effort.

The aborigines of the country, the same as we signify to-day by the name of "Indians," were, at that time, the legal owners and rulers of this vast wilderness and its rich treasure; they were in possession of a paradise, in which these people enjoyed a happy life, full of contentment; the wild nature of the country closely resembling their primitive life, similar to that of the first pair of human beings in the garden of Eden. Like the angel sent by God, after the fall of man, armed with a sword for the purpose of driving Adam and Eve out of paradise, came the civilizing people from Europe into the American wilderness. The axe and the fire destroyed, in an astonishingly short space of time, the luxuriant forests and grassy prairies to an immense extent. Agricultural machines of various kinds, and trained domestic animals, aided the diligent hands and the intelligence of man, in the cultivation of the soil and in his aim at agricultural success. In place of the former wilderness appeared farms and plantations with luxuriant and remunerative cultivation, flourishing gardens and profitable stocks of cattle. Side by side with agriculture and horticulture and in the same proportion, industries and commerce began to flourish, and means of communication and ways of transportation were established. Population increased steadily, and the formation of new and well organized states resulted in comparatively short periods. The number of population increased from a few hundred thousand to fifty millions in a comparatively short space of time. All nations of Europe and many countries of Africa and Asia, all religious sects and all languages have contributed representatives, who live in peace, have friendly intercourse with each other, follow their separate vocations undisturbed, and have good cause to be contented and happy. No country on the globe shows in the course of its history a similar development of its society, agriculture, industry and commerce to the United States of America.

The conditions and motives causing this development and guaranteeing its thriving progress in the future, find their sure source of support in the here ruling freedom; in the protection,

by the state, of personal liberty, in the free and independent pursuit of personal and co-operative industry, regulated by wise laws. A high degree of intelligence, of scientific and practical education, and restless activity of the leading portion of the population, combined with the natural impulse of the whole people to build up a great, independent and mighty nation, led those institutions, laid down and guaranteed in the fundamental constitution of the country, into the track of a marvelously successful development.

The immigration from the other side of the ocean continues constantly and in great numbers, even promises to assume larger dimensions in the future. Hundreds and hundreds of thousands of persons, wishing to evade the dominant circumstances on the other side, and to take part in the blissful institutions of this country, are flocking to our shores. They are eager to take part in the common and paying activity for the development of its rich treasures, and the use of them for their own benefit and for the welfare of the whole people.

Similar to the high, rising stream overflowing its banks in quiet but rapid course, spreading over the territory adjoining, supplying the soil with fertilizing material, the great stream of immigration is spreading over the southern, but more particularly over the northern and western regions of the country, to transform the wilderness into cultivated fields. A comparatively small portion of immigrants remain, either temporary or permanent residents, in the older states of this country.

Simultaneously with the rapid increase of our population and its wonderful distribution over every section of the continent, with the consequent marvelous increase in the production of the prime necessities of life, it is highly important that we should take heed to the preservation of our forests where still left in their primitive grandeur, and cultivate them where destroyed by the hand of Nature or man. Every person noticing the difference in the appearance of the territory of the United States, between the seventeenth century and the present time, must be favorably impressed with the surprising development made during that time. Not only the development of this immense territory, as stated hereinbefore, its increase to its present grandeur, in so wonderfully short a space of time, but the change of the climate of the country is also very surprising. In the same ratio as the destruction of a large portion of the forests and the cultivation of the soil has progressed the climate has become milder

In general. Anything pertaining to the whole United States is also applicable to the State of Minnesota.

It would certainly be a great mistake to take it for granted that the climate as well as the financial condition of the country would be benefited by an increasing removal of the forests, and the utilization of the soil on which they were growing for horticulture and agriculture. On the contrary, and this should never be lost sight of, a climate as good as possible, and the utmost prosperity in agriculture and horticulture, can only be expected to be prevalent in a country where a reasonable proportion of open plains and extensive forests exist, may the same be large or small. A large number of species of animals find a home in these forests; they furnish many useful products and form landscapes exceedingly beautiful to the eye; they are rich sources from which to obtain various kinds of wood, which are absolutely necessary for the maintenance and promotion of our civilization; they also form valuable reservoirs for the precipitations of the atmosphere. During the time of these precipitations, and a long time afterwards, these extensive forests check the immediate drain of the water so received, and discharge the same only by degrees, partly through the medium of springs, into the rivers and lakes, partly through evaporation into the air. In proportion to the degree of the temperature and the amount of water contained in the air, a larger or smaller amount of water is obtained through evaporation, which has a tendency to moderate the excessive heat of the summer season, and guarantees the plants refreshing dew and rain. Forests are also capable of resisting hurricanes. Currents of air, coursing along in furious career, whenever they encounter forests in their rapid course, are considerably moderated, so that they pass afterward over the open country with greatly diminished force. A roaring, rushing, whistling or yelling noise is observed in these forests during the tremendous attack of the tempest; trees are bending, inclining and wavering, and their branches are cracking. The forest is defending itself against the fury of the hurricane with great success. The success of its resistance is proportionately greater where bluffs or chains of mountains support the same.

It is no doubt true that cognizance of the great value of forests, more particularly the great value of the preservation of a most favorable proportion of the same with the open country, with a view to regulation of the climate and the water courses as well as in regard to their influence on agriculture and horticulture,

and also in view of a prosperous condition of the finances of the country generally, is very limited with the people in general, as well in the upper as in the lower strata of society.

Take it in general and you will find that the tendency is still prevailing to extirpate the forests more and more, and establish farms in their place, or to enlarge farms already established. This tendency is prevailing, not only in places where the nature of the soil is favorable, but also in places where the soil is very unfavorable for the establishment of farms. The forests are annihilated, not only on the plains, but also on the level ridges, for the purpose of establishing or enlarging farms. Even on steep ridges and in ravines of the bluffs, the axe and the fire are instrumental to divest the land of their luxuriant growth of trees to a great extent.

The method, adopted during the latter years, to decimate the woods along the slopes of the bluffs by the use of the axe, the fire or grazing cattle, break up the soil and place the same under agriculture, has created an entirely new, but in the highest degree ruinous, system of water courses. No wonder that failure of crops, injury to cultivation and to the stock of cattle, follow the pernicious influence of the same, when, after every violent shower of rain, the dams, built mostly or exclusively of earth, are demolished, the bridges carried off, and the roads left in such a miserable condition that they are impassable. This great calamity is at this time predominant in the bluff regions. The in the highest degree important question, how the same may be diminished, or even excluded, is certainly not an untimely one. We will try to answer the same in a few short passages:

First — Leave off entirely to set the prairie on fire.

Second — The cattle must be excluded from the growing, or commenced to be growing, underwood.

Third — Leave the steep declivities of the bluffs, such as are absolutely unpropitious for agriculture, to the unlimited activity of Nature, and in places where Nature acts insufficiently for the growth of timber, it would be well to help her by planting young trees, shrubs, etc.

Fourth — The land located on the slopes of the bluffs, and already cultivated, which may be used for other purposes than the growth of timber, should be seeded down with grass plants, such as are hardy and useful for feeding cattle. In such soil of our bluff territory, which contains lime in profusion, the planting of esparcet (*Hedysarum onobrychis*) would be most excellent; the

same endures our climate sufficiently, and renders, when cut and dried at the time of its bloom, a large quantity of superior fodder for cattle.

FRUIT AT SOUTHERN MINNESOTA FAIR.

From Rochester Record and Union.

The fruit show at the Southern Minnesota fair last week was the finest ever seen in this city, and considering the quality has never been approached in the State; and the man who twenty years ago would have predicted such a show possible would have been deemed demented. Two prominent features in this exhibition were the absence of large collections, and the fact that there was no fruit on the shelves for mere effect. With the exception of about a dozen plates, all were entered for competition, and with the exception of three professionals, all were the exhibits of farmers, of just such fruit as they had plenty more of at home. The specimens were in many instances so uniformly fine that the committee found great difficulty in making awards, especially the committee on plates, who consumed more than one entire day in their labors, completing their duties to the entire satisfaction, so far as we have been able to learn, of all the exhibitors. There were brought out at this fair, for the first time, a number of promising Minnesota seedlings, and the commissioner to the New Orleans Exposition found among them, as well as the older sorts, many things worthy of notice, and empowered Mr. A. W. Sias to make and forward a collection for exhibition at that place, and also expressed a strong desire to have a photograph of this exhibit forwarded with that collection, to show to the world what a single locality can do in the way of supplying the people with such a desirable fruit as the apple. The tempting display made by Pomona on this occasion will long linger in the memory of those who were so fortunate as to witness it, and will go far to dispel all doubts as to the future of horticulture in Minnesota.

THE LAW RELATING TO THE PRINTING AND DISTRIBUTION OF THE HORTICULTURAL REPORTS.

CHAPTER 8, GENERAL LAWS OF 1883.

AN ACT TO AMEND CHAPTER SEVENTY-TWO (72) OF THE GENERAL LAWS OF ONE THOUSAND EIGHT HUNDRED AND EIGHTY-ONE (1881), RELATING TO THE STATE HORTICULTURAL SOCIETY.

Be it enacted by the Legislature of the State of Minnesota :

SECTION 1. Sections one (1) and two (2) of chapter seventy-two (72) of the General Laws of one thousand eight hundred and eighty-one (1881) relating to the State Horticultural Society shall be amended so as to read as follows:

SEC. 1. There shall be annually printed and bound thirty-five hundred (3,500) copies of the annual report of the State Horticultural Society, provided the number of printed pages of the same shall not exceed five hundred (500); which report shall be transmitted to the governor, and shall be distributed by the State Horticultural Society, as follows:

One (1) copy to each of the State officers, members of the legislature, judges and clerks of the supreme and district courts, county auditors and members of the board of regents and faculty of the State University; fifty (50) copies to the State Historical Society; one hundred (100) copies to the State Board of Immigration; one hundred (100) copies to the State Agricultural Society in exchange for a like number of its annual reports; and a sufficient number of copies to each county horticultural society to supply one copy to each of its members; provided, such county society shall be in active existence, and shall have filed with the secretary of the State Horticultural Society a list of its officers and committees, and an abstract of its proceedings for the year preceding; and the remaining copies shall be distributed by the State Horticultural Society, in such manner as it shall deem best, after retaining a sufficient number for its library and to supply future members and exchanges.

SEC. 2. This act shall take effect and be in force from and after its passage.

Approved February 28, 1883.

THE LAW OF MINNESOTA ON FRUIT STEALING.

Chapter 35, General Laws 1867.

AN ACT FOR THE PROTECTION OF FRUIT AND ORNAMENTAL
TREES, SHRUBS, VINES, AND VEGETABLE PRODUCTIONS.

Be it enacted by the Legislature of the State of Minnesota :

SECTION 1. That if any person or persons in this State shall hereafter enter the enclosure of any person, without the leave or license of such owner, and pick, destroy, or carry away the fruit, or any portion thereof, of any apple, pear, peach, plum, grape, or other fruit tree, bush, or vine, or any vegetable products, such person shall be deemed guilty of a misdemeanor, and upon conviction thereof may be fined any sum not less than ten nor more than fifty dollars, and imprisoned in the county jail for any period not exceeding thirty days.

SEC. 2. That if any person or persons in this State shall willfully and maliciously, and without lawful authority, cut down, root up, sever, injure, peel, destroy or carry away, any fruit or ornamental tree, or shrub, cultivated root, plant, or vine, of whatever kind, or any fruit or other vegetable production, standing, or growing on, or being attached to the land of another, or shall willfully, and without lawful authority, cut down, root up, destroy or injure, in any manner, or carry away any fruit or ornamental tree, plant, shrub, or vine, upon any street, lane, alley, public highway, or public grounds, in any city, town, or village in this State, such person or persons so offending shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine of not more than five hundred dollars, or by imprisonment in the county jail not exceeding three months, or both fine and imprisonment, at the discretion of the court having jurisdiction of the case, and shall, moreover, be liable in double the amount of damages to the party injured.

SEC. 3. The penalties incurred by violation of this act may be enforced by indictment in any court having jurisdiction of misdemeanors in the county where the offense is committed, or the fine may be recovered in an action for debt before any justice of the peace of such county.

SEC. 4. This act shall take effect and be in force from and after its passage.

Approved March 9, 1867.

ADDITIONAL ANNUAL MEMBERS, 1885.

A. E. Gipson.....	Greeley, Colorado.
C. H. Hoffner	Litchfield.
Seth H. Kenney	Morristown
L. D. Mills	Garden City.
C. T. Palmer	Minneapolis.

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FOR THE YEAR 1885,

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